Stipulation and Agreed Record.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1921.

No. 158

THE STATE OF MISSOURI *EX REL.* SOUTHWESTERN BELL TELEPHONE COMPANY, PLAINTIFF IN ERROR,

vs.

PUBLIC SERVICE COMMISSION OF MISSOURI AND JOHN A. KURTZ, EDWIN J. BEAN, HUGH McINDOE, ET AL., ETC.

IN ERROR TO THE SUPREME COURT OF THE STATE OF MISSOURI.

RECORD FILED AUGUST 29, 1921.

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1 In the Supreme Court of the United States, October Term, 1921.

No. 496.

STATE at the Relation of SOUTHWESTERN BELL TELEPHONE COMPANY, a Corporation, Plaintiff in Error,

vs.

PUBLIC SERVICE COMMISSION OF MISSOURI and JOHN A. KURTZ, Edwin J. Bean, Hugh McIndoe, Noah W. Simpson, and Edward Flad, Composing the Public Service Commission of Missouri, Defendants in Error.

PART 1.

Pleadings.

A.

Order of the Public Service Commission of Missouri, dated August 4, 1919, initiating this cause (Caption omitted):

2 It appearing to the Commission that on August 1, 1918, pursuant to proclamation of the President of the United States, under authority of an Act of Congress, possession, control and operation of the telephone systems of this state were taken over by the Postmaster General of the United States, and that on the 13th day of December, 1918, the Postmaster General, by Order No. 2495, authorized and required the Southwestern Bell Telephone Company, effective the 21st day of January, 1919, to charge increased rates for telephone toll messages throughout the United States, including such messages between points in the State of Missouri, and that on the — day of ——, 1919, said Postmaster General authorized and required said Southwestern Bell Telephone Company, effective on the 1st day of May, 1919 (except as to Charleston and Kirksville, effective July 1, 1919), to charge increased rates for telephone exchange service at its exchanges in the following cities in this state:

Armstrong	Glenwood	Peirce City
Aurora	Grain Valley	Poplar Bluff
Benton	Greenwood	Portageville
Bismarck	Hayti	Republic
Bloomfield	Hannibal	St. Clair
Blue Springs	Higbee	St. Joseph
Brookfield	Hornersville	St. Louis
Campbell	Kirksville	Sedalia
Carrollton	Lamar	Seligman
Caruthersville	Lancaster	Senath
Chaffee	Lee's Summit	Sikeston
Charleston	Lilbourne	Slater
Chillicothe	Malden	Smithville
Clarkton	Marceline	Southwest City
Clayton	Marionville	Springfield
Dexter	Marshall	Stanberry
East Prairie	Mexico	Trenton
Essex	Moberly	Valley Park
Eureka	Monett	Washburn
Fayette	Neosho	Webster Groves
Ferguson	Noel	Wentworth
Glasgow	Oran	

And it further appearing that on the 18th day of November, 1918, said Postmaster General, by Order No. 2352 (the same being a modification of Order No. 1931, issued on the 28th day of August, 1918), authorized and required said Southwestern Bell Telephone Company, effective on the 1st day of December, 1918, to put into effect certain increased service connection charges at its various exchanges in this state.

And it further appearing that such toll message rates and exchange rates and service connection charges are greatly in excess of the rates and charges authorized by the Public Service Commission of Missouri and in effect prior to the effective date of aforesaid orders of the Postmaster General.

3 And it further appearing that the Supreme Court of the United States has sustained the authority of the Postmaster General to promulgate and require the collection of such toll and exchange rates during the period of its operation of the telephone systems of the United States.

And it further appearing that, by an Act of Congress approved on July 11, 1919, the President was directed "to return and deliver to the respective owners thereof all of the systems, lines and property taken possession of or received, operated, supervised or controlled by him under authority of said joint resolution," and that it was also provided in said Act, "That the existing toll and exchange telephone rates as established or approved by the Postmaster General on or prior to June 6, 1919, shall continue in force for a period not to exceed four months after this Act takes effect, unless sooner modified or changed by the public authorities—state, municipal or otherwise—

having control or jurisdiction of tolls, charges and rates or by contract or by voluntary reduction."

And it appearing that said Act of Congress, by its terms, became effective at midnight July 31, 1919, and that the operation and control of the lines, systems and local exchanges of said Southwestern Bell Telephone Company by the Postmaster General terminated at said time.

And it further appearing to the Commission that said Southwestern Bell Telephone Company should now be required to show cause, if any it has, why it should be permitted to continue to charge the rates and charges for telephone toll and exchange service and
4 for service connections within this state now being charged by it as heretofore authorized by the Postmaster General.

Now, after due deliberation, it is, by the Commission,

Ordered:

1. That said Southwestern Bell Telephone Company be and it is hereby required to show cause to this Commission why it should be permitted to continue to charge the rates and charges for telephone service now rendered by it within this state and put into effect by the orders of the Postmaster General and conditionally extended by the Act of Congress for four months from August 1, 1919, including service connection charges.

Ordered:

2. That this order shall be in full force and effect on this date and that the Secretary of the Commission forthwith serve on said Southwestern Bell Telephone Company, and upon the Mayor of each of the cities mentioned in this order, a certified copy of this order, and that said Southwestern Bell Telephone Company be required to file its answer herein on or before ten days from this date and that thereafter this Commission, by usual and orderly procedure, enter into an investigation and inquiry of the matters and things involved in this order and at such hearing or hearings any person or city interested may appear and offer such evidence as may be desired.

By the Commission,

K. R. MORROW,
Secretary.

5 B.

Answer of Southwestern Bell Telephone Company to the Commission's Order of August 4, 1919 (Caption Omitted).

6 To the Public Service Commission of the State of Missouri:

The Southwestern Bell Telephone Company, for its answer herein, respectfully avers that it is a corporation organized and existing under and by virtue of the laws of the State of Missouri, and that on the 31st day of July, 1918, it owned, operated and maintained, and had for many years owned, operated and maintained numerous tele-

phone exchanges and toll lines within the State of Missouri, and was subject to the jurisdiction of this Honorable Commission; that it was originally organized under the name of "The Missouri and Kansas Telephone Company"; that on or about the 1st day of January, 1917, its name was duly and lawfully changed to the "Southwestern Bell Telephone Company."

That the Missouri and Kansas Telephone Company, so long as it operated under that name, operated telephone exchanges and toll lines in the State of Kansas and in the State of Missouri, exclusive of the St. Louis area.

On the 31st day of December, 1916, the financial history of the said The Missouri and Kansas Telephone Company was as follows:

7 The Missouri and Kansas Telephone Company had received for all its outstanding certificates of capital stock cash at par except that two or three per cent of the whole amount had been issued for property; and of the whole amount of stock issued for cash, the total discount that had been allowed was less than four hundred dollars. The total indebtedness of the company, consisting of bonds and notes, had been sold for cash at par except a very small amount of bonds of other companies which had been assumed as part payment for property. There was, therefore, no water in the capitalization of petitioner, but its total outstanding stock and debt represented an equivalent amount of actual cash which had been devoted and still is devoted to the use of the public.

The Missouri and Kansas Telephone Company was organized in 1882, and from that time until 1917 it had paid dividends varying from nothing to seven per cent per annum. It had never paid a dividend higher than seven per cent, and that only for one year; it had paid six per cent for two years; it had paid five per cent three years; after 1906, and up to 1917, it paid nothing. Its average dividend during the entire period was about one and one-half per cent per annum, and the average dividend earned was no higher than the average dividend paid.

After 1906 it neither paid nor earned any dividend; and the reason why it neither paid nor earned any dividend after that date was that it was subjected to ill-advised and uninformed competition extending throughout the territory where it operated exchanges. During most of said time it did not fully earn its interest charges.

8 All of the foregoing averments were fully sustained by the undisputed testimony submitted to your Honorable Commission in the Springfield case.

By reason of the ill-advised and uninformed competition, the history of which and the reasons for which were submitted in detail in said case, the exchange rates in effect in 1916 throughout the said territory, were almost universally inadequate and the public was receiving its telephone exchange service at less than cost.

That the general level of exchange rates was too low in 1916 is shown by the fact that The Missouri and Kansas Telephone Company earned no dividends after 1906, and by the fact that the exchange rates were found to be too low by this Honorable Commis-

sion in all the large number of cases investigated by it after its establishment in 1913.

That on or about the 1st day of January, 1917, the Missouri and Kansas Telephone Company caused its name to be changed to the Southwestern Tell Telephone Company and purchased the property of the Bell subsidiary company which had theretofore operated in the St. Louis area. The financial history of that company was practically the same as the financial history of The Missouri and Kansas Telephone Company so far as concerned capitalization; that is to say, its stock had been sold for cash at par and it had received a dollar in cash for every dollar of outstanding indebtedness, and the proceeds of all its capital stock, bonds and notes had been devoted to the service of the public; and its property was taken over and placed on the books of the Southwestern Bell Telephone Company on such basis that the capitalization of the present company is entirely beyond criticism, and for every dollar of stock or debt now outstanding a dollar has been received and devoted to the service of the public. Said company operating in the St. Louis area from the beginning of its operations up to the time when its property was sold, on or about the 1st of January, 1917, paid an average annual dividend upon its capital stock outstanding of 5.6 per cent, and the dividends paid by it during the last seven years of its operation were as follows:

1910	5 per cent.	1914	3 per cent.
1911	4 per cent.	1915	3 per cent.
1912	4 per cent.	1916	4 per cent.
1913	3 per cent.		

And the dividends paid did not exceed the dividends paid so that the total par value of the capitalization of the present Southwestern Bell Telephone Company represents that identical amount of money actually invested in the service of the public, no part of which has been paid back to the investors, either in unreasonable or extravagant dividends, or in any other manner.

On August 1st, 1918, the President of the United States, pursuant to the joint resolution of Congress took possession of the plant and business of the Southwestern Bell Telephone Company in Missouri and elsewhere. Thereafter, for the period of one year, said plant and business were possessed and controlled and operated by the President through Albert S. Burleson, Postmaster General. On or prior to May 1st, 1919, all the rates now being charged and collected by the Southwestern Bell Telephone Company in the State of Missouri were duly and lawfully authorized, promulgated and for the most part established by the President through Albert S. Burleson, Postmaster General, and said rates are now the lawful rates and said rates were from time to time duly reported to this Honorable Commission for its information.

While said rates were and are, in almost all cases, higher than the rates effective prior to the period of Federal control, they are not, and will not be, high enough to yield to the Southwestern Bell

Telephone Company an adequate or reasonable return upon the amount of money it has invested in the public service in the State of Missouri, nor adequate or reasonable return upon the fair value of its property, used and useful, in giving the telephone service which it gives in the State of Missouri. No rate at this time charged by the Southwestern Bell Telephone Company is unreasonably high; most of said rates are unreasonably low.

Throughout its history your petitioner has kept a book account of the cost of its plant as a whole; and it has such an account by States, but not by exchanges. The amount of money earned by the plant and business of the Southwestern Bell Telephone Company in the State of Missouri during the month of June, 1919, applicable, first, to reserve for replacements; second, to interest, and, third, to dividends, was only 10.95 per cent of the cost of its plant in Missouri as shown by the said plant account.

The income for the said month of June, 1919, included the revenue derived from exchange rates established during the period of Federal control and the revenue derived from the toll
11 rates and the service and installation charges established during said period.

The annual depreciation of plant, for which reserve should be made out of the annual earnings, will be for the property in the State of Missouri as a whole not less than 6.5 per cent; so that the rate of return, the per cent applicable to interest and dividends, does not exceed 4.45 per cent on the original cost as shown by the book account.

The reason why said present rates are inadequate and unreasonably and unjustly low is that the cost of giving telephone service in the State of Missouri has enormously increased in the last three years and especially since the outbreak of the war between the United States and Germany. The general level of rates was unduly and unreasonably low in the State of Missouri in 1916. While rates have been substantially increased, the cost of giving the service has been enormously increased, so that the rates are still inadequate and unreasonably and unjustly low. It is the judgment of this defendant that the present cost of giving the service will not be diminished for a very long time, but is more likely to be increased than diminished.

The effect of the World War began to be felt in the increased cost of giving service as early as 1916, but there was no very serious increase until 1917. After the declaration of war by the United States the cost of giving service, and the difficulties of giving service, increased by leaps and bounds. Men and girls, and especially girls, were constantly leaving the service of the Southwestern Bell Telephone Company because they could do better elsewhere, and the result was that the company had in its employ an abnormal number of new and inexperienced girls who drew the lowest pay
12 upon the schedule, and the same was true to a considerable extent as to linemen. Wages had to be advanced from time to time to keep the service going; they were not advanced fast enough to hold in employ the usual average of experienced help.

The following statement shows the total payrolls charged to operating expenses in the months indicated:

Southwestern Bell Telephone Company (Mo.).

State of Missouri.

Total Pay Rolls Charged to Operating Expenses.

(Annual Basis.)

January, 1917	$2,236,548
June, 1917	2,363,312
January, 1918	2,585,724
June, 1918	2,604,612
January, 1919	2,821,092
June, 1919	3,227,016

Increase June, 1919, over January, 1917, $990,468.

Per cent of increase June, 1919, over January, 1917, 44%.

Since June, 1919, increases in pay rolls, amounting to more than one hundred thousand dollars have been made, and the officials of the Southwestern Bell Telephone Company believe that by September 1st, 1919, additional increases will have to be made aggregating one hundred thousand dollars more.

But this is not all. If the increases which have now been made to operators are sufficient to keep them in the employ of the company the average period of service will gradually rise, which
13 will mean an additional increase in actual expense, even though there be no further increase in the basic rate schedule. The same will be true as to linemen. Not only this, but the company as a whole is still undermanned; that is to say, the number of persons co-operating to do the necessary work is still abnormally low because of scarcity of labor, and the actual cost of giving the service will be still further increased when the number of employes returns to normal. Furthermore, there have been very large increases in the cost of materials used in maintenance, and there have been increases in the rate of taxes and in almost all other items of outgo.

The present scale of remuneration for various forms of labor engaged in giving telephone service in the State of Missouri is in no degree above the scale of remuneration to labor in other lines of industry involving the same degree of preparation, education and skill.

The cost of giving telephone service, outside return on investment, is the price which must be paid for labor and for materials and for taxes levied by the Government; and as it is estimated that seventy-five per cent of the cost of materials consists in the cost of labor, the question of the cost of giving telephone service, outside return on investment, becomes almost wholly one of labor; so that it is the belief of the telephone officials that the present cost of

giving telephone service in the State of Missouri is, practically speaking, permanent unless, indeed, the cost is destined still further to increase. The officials of the telephone company do not believe it will be possible to reduce the present labor cost in the next ten years.

14 It is sometimes said that in ascertaining values by which the reasonableness of rates are to be measured the amount of stocks and bonds is not very material. This, however, depends on circumstances. The Southwestern Bell Telephone Company shows that all the money represented by its stocks and notes and debt and bonds has been devoted to, and is now in the use of, the public. This is a state of affairs very uncommon in the case of large corporations, and it is right and proper that very serious consideration under these circumstances should be given to the amount of stocks, bonds and notes of the Southwestern Bell Telephone Company.

The accounts of this company are kept, and for a good many years have been kept, upon the system prescribed by the Interstate Commerce Commission. The Interstate Commerce Commission established a system of bookkeeping which was as nearly perfect as it could devise. That system is intended to eliminate all errors, all falsities, all possible frauds and impositions, and it has to be followed under severe penalties. There is very little possibility of difference of opinion between the accountants of the Southwestern Bell Telephone Company and the accountants of the Commission as to the foregoing allegations of fact.

To offset the very large increase in pay roll above set forth in the State of Missouri, the increase in revenue which will result from the increase in exchange rates installed May 1st, 1919, will not exceed five hundred thousand ($500,000.00) dollars.

Under its present schedule of rates in the State of Missouri the Southwestern Bell Telephone Company is not earning to
15 exceed three and a half per cent per annum upon the fair present value of its property, used and useful, in giving its service in the State of Missouri, and is not earning five (5%) per cent per annum upon the actual original cost of its physical plant.

The Southwestern Bell Telephone Company therefore asks that the Commission make such investigation as it deems proper, and that after such investigation it make an order effective whenever the rates established under Federal control cease to be effective, authorizing the present rates to be charged and collected until otherwise ordered by the Commission.

SOUTHWESTERN BELL TELEPHONE COMPANY,
By D. A. FRANK,
T. O. STOKES,
J. W. GLEED,
Attorneys.

STATE OF MISSOURI,
City of St. Louis, ss:

F. O. Hale, of lawful age, being first duly sworn, deposes and says: My name is F. O. Hale; I am the general manager of the Southwestern Bell Telephone Company of the State of Missouri. I have read the foregoing petition and know the contents thereof, and that they are true; except as to matters therein alleged on information and belief, and as to those matters I believe them to be true.

F. O. HALE.

Subscribed and sworn to before me this 6th day of August, A. D. 1919.

My commission expires Oct. 3d, 1920.

[SEAL.]

JNO. M. MORAN,
Notary Public.

16 C.

Southwestern Bell Telephone Company's amended motion for a rehearing filed before the Commission on November 29, 1919 (Caption and signatures omitted):

17 *Amended Motion for Rehearing.*

Now comes the Southwestern Bell Telephone Company, defendant in above entitled cause, and moves the Commission to set aside its decision and orders entered and rendered by it in this cause on the 26th day of November, 1919, and grant it a rehearing of this cause, and for grounds of this motion defendant states:

I.

Said orders and decision are confiscatory, unreasonable and unjust in that said orders and decision prohibit defendant from operating and maintaining its telephone property within this state without actual loss and prevent defendant from maintaining an adequate reserve for depreciation and from earning a reasonable return upon the fair value of its property used and useful in giving the service which it does give to the people of this State. Said orders and decisions are, therefore, unconstitutional, void and unenforceable, and are contrary to and in violation of the Constitution of the United States and particularly the Fourteenth Amendment thereto, prohibiting the taking of property without due process of law and guaranteeing to all persons equal protection of the law, and are contrary to and in violation of the Constitution of the State of Missouri and particularly Article II, Section 20 and 21 thereof, pro-
18 viding that no private property shall be taken or damaged for public or private use without just compensation.

II.

Because the Commission found that the value of the property of the defendant used and useful in giving telephone service in this state was not exceeding $20,400,000.00, whereas the uncontradicted evidence in this case shows that said property is worth not less than $31,355,278.00, and the said finding, orders and decision thereby deprives defendant of its property without due process of law and denies to it the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States prohibiting the taking of property without due process of law and guaranteeing to all persons equal protection of the law and contrary to and in violation of Article II, Sections 20 and 21 of the Constitution of the State of Missouri, providing that no private property shall be taken or damaged for public or private use without just compensation.

III.

Because, on the face of said orders and decision, it is shown that the Commission did not arrive at its said valuation of not exceeding $20,400,000.00 for defendant's property in this state in a legal or proper manner, but contrary to and in spite of all of the evidence in regard to the value of defendant's said property introduced in this case, and contrary to and in spite of the fact that the undisputed book cost of defendant's said physical property in this state is
19 $22,888,943.00, and contrary to and in spite of the undisputed fact that the reproduction cost new less depreciation of defendant's said property in this state is $31,355,378.00; thereby depriving defendant of its property without due process of law and denying to defendant the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and Article II, Sections 20 and 21 of the Constitution of the State of Missouri; and in violation of the Public Service Commission Law of Missouri and especially Sections 93 and 191 thereof.

IV.

Because the Commission in its said orders and decision excludes certain property of the defendant as not used and useful in the service of the public, whereas the evidence showed that said property was purchased by the defendant in the ordinary course of business in the exercise of its best business judgment and its exclusion by the Commission for the purpose of making rates is thereby the taking of the defendant's property without due process of law and denies to the defendant the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and Article II, Sections 20 and 21 of the Constitution of the State of Missouri.

V.

Because the Commission in its said orders and decision disregarded the evidence respecting working capital and allowed the sum of $1,-
033,670.48 only, whereas the undisputed evidence in the case
20 showed that the actual amount used by the defendant for working capital was $1,051,184.00, and the said finding of the Commission thereby deprived the defendant of its property without due process of law and denied to it the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and Article II, Sections 20 and 21 of the Constitution of the State of Missouri.

VI.

Because the Commission in its said orders and decision has excluded from its estimate of the value of defendant's property in this state any amount for the cost of establishing defendant's business and of making defendant's plant a going and operating institution, thereby depriving defendant of its property without due process of law and denying it the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States prohibiting the taking of property without due process of law and guaranteeing to all persons the equal protection of the law, and contrary to and in violation of the Constitution of the State of Missouri and particularly Article II, Sections 20 and 21 thereof, providing that no private property shall be taken or damaged for public or private use without just compensation.

VII.

Because the Commission in its said orders and decision practically fixed 6.81% as the maximum of return which defendant may earn
a return which, in view of the vicissitudes of the telephone
21 business, is insufficient to secure the capital necessary to maintain, develop and extend defendant's telephone system and is not a fair return under the evidence and in view of the value of money and the returns upon capital investments in other lines of industry in the State of Missouri; thereby depriving defendant of its property without due process of law and denying to defendant the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and Article II, Sections 20 and 21 of the Constitution of the State of Missouri.

VIII.

Because the Commission in its said orders and decision unlawfully and arbitrarily disregarded and disallowed large items of legitimate expense, including increases in payrolls and payments for services rendered by the American Telephone and Telegraph

Company, thereby depriving defendant of its property without due process of law and denying to defendant the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and Article II, Sections 20 and 21, of the Constitution of the State of Missouri.

IX.

Because the Commission found that the schedule of exchange rates put into effect by Albert S. Burleson, Postmaster General of the United States, and now charged and collected by de-
22 fendant contained rates which are unreasonable and unjust and ordered defendant to cancel certain specific rates contained therein and in lieu thereof to charge and collect certain other specified lower rates contained in said orders and decision on and after December 1st, 1919, although the Commission found that the return from said rates, even after cutting down the valuation of defendant's property and disallowing large sums of legitimate expense, would be only 7.9% on the value of defendant's property as found by the Commission, a rate which, in itself, is not unreasonably high, thereby depriving defendant of its property without due process of law and denying to it the equal protection of the law contrary to and in violation of said Fourteenth Amendment of the Constitution of the United States and said Article II, Sections 20 and 21 of the Constitution of the State of Missouri.

X.

Because the schedules of exchange rates ordered put in effect by the Commission in its said orders and decision, and each and every one of said schedules of exchange rates, collectively and in regard to each and every exchange named in said orders and decision are unreasonable, unjust, unfair, discriminatory, confiscatory and insufficient to allow defendant to earn a fair return on the fair value of its property in each of said exchanges and in this State used and useful in giving such exchange service, and in some instances are insufficient to allow defendant to earn any return whatever on its said property. Said schedules of rates, and each and every one of them, are, therefore, unconstitutional, void and unenforce-
23 able, and deprive defendant of its property without due process of law and deny it the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and contrary to and in violation of Article II, Sections 20 and 21, of the Constitution of the State of Missouri.

XI.

Because said orders and decision abolish the service connection, installation and move charges put into effect by Albert S. Burleson, Postmaster General of the United States, contrary to and in spite of the undisputed evidence that said charges are reasonable, just,

fair, lawful and nondiscriminatory, and that they are a necessary rate classification and that the revenue derived therefrom is necessary to enable the defendant to earn a fair return upon the fair value of its property in this state, used and useful in giving telephone service to the people of this state, thereby depriving defendant of its property without due process of law and denying to it the equal protection of the law contrary to and in violation of said Fourteenth Amendment of the Constitution of the United States and said Article II, Sections 20 and 21 of the Constitution of the State of Missouri.

XII.

Because said orders and decision are against the law; are against the evidence; are against the law and the evidence; are against the law under the evidence; are against the weight of the evidence; and are contrary to, against and in spite of the undisputed evidence.

24 Wherefore, the defendant, Southwestern Bell Telephone Company, prays the Commission that it set aside, rescind and hold for naught its said orders and decision and that it grant defendant a rehearing and that upon such rehearing defendant be allowed to introduce further testimony, file supplementary briefs and present oral arguments before the Commission at such time and upon such dates as may be fixed by the Commission.

25 D.

Order of the Commission dated November 29, 1919, overruling Southwestern Bell Telephone Company's amended motion for a rehearing (caption omitted):

26 *Order.*

Now, at this time, comes on to be considered the Amended Motion of the Southwestern Bell Telephone Company, praying for a rehearing and modification of the order entered herein on November 26, 1919.

Now, after due consideration, it is,

Ordered: 1. That the amended motion of the Southwestern Bell Telephone Company for a rehearing and modification of the order entered herein on the 26th day of November, 1919, be and the same is hereby overruled.

Ordered: 2. That this order take effect on this date.

By the Commission.

[SEAL.] N. E. WILLIAMS,
Secretary.

All concur, except Simpson, C., who dissents.

27 E.

Southwestern Bell Telephone Company's petition for review, filed in the Circuit Court of Cole County, Missouri, on the 19th day of December, 1919 (caption omitted):

28 *Petition for Review.*

To the Honorable Circuit Court of Cole County, Missouri:

"Comes now the petitioner, the Southwestern Bell Telephone Company, and respectfully states that it is and was at all the times hereinafter mentioned a corporation duly organized and existing under and by virtue of the laws of the State of Missouri, and is and
29 was at all the times hereinafter mentioned, and still is, owner of and is operating the telephone exchanges in the State of Missouri hereinafter more specifically set out.

"Your petitioner further states that on the fourth day of August, 1919, defendants issued the following order in case No. 2121 entitled 'Public Service Commission of Missouri v. Southwestern Bell Telephone Company (Inquiry and Investigation of Rates Charged under Order of the Postmaster General)', to-wit:

"It appearing to the Commission that on August 1, 1918, pursuant to proclamation of the President of the United States, under authority of an Act of Congress, possession, control and operation of the telephone systems of this State were taken over by the Postmaster General of the United States, and that on the 13th day of December, 1919, the Postmaster General, by Order No. 2495, authorized and required the Southwestern Bell Telephone Company, effective the 21st day of January, 1919, to charge increased rates for telephone toll messages throughout the United States, including such messages between points in the State of Missouri, and that on the — day of ——, 1919, said Postmaster General authorized and required said Southwestern Bell Telephone Company, effective on the 1st day of May, 1919 (except as to Charleston and Kirksville, effective July 1, 1919), to charge increased rates for tele-
30 phone exchange service at its exchanges in the following cities in this State:

Armstrong	Gleenwood	Peirce City
Aurora	Grain Valley	Poplar Bluff
Benton	Greenwood	Portageville
Bismarck	Hayti	Republic
Bloomfield	Hannibal	St. Clair
Blue Springs	Higbee	St. Joseph
Brookfield	Hornersville	St. Louis
Campbell	Kirksville	Sedalia
Carrollton	Lamar	Seligman
Caruthersville	Lancaster	Senath
Chaffee	Lees Summit	Sikeston

Charleston	Lilbourne	Slater
Chillicothe	Malden	Smithville
Clarkton	Marceline	Southwest City
Clayton	Marionville	Springfield
Dexter	Marshall	Stanberry
East Prairie	Mexico	Trenton
Essex	Moberly	Valley Park
Eureka	Monett	Washburn
Fayette	Neosho	Webster Groves
Ferguson	Noel	Wentworth
Glasgow	Oran	

"And it further appearing that on the 18th day of November, 1918, said Postmaster General, by Order No. 2352 (the same being a modification of Order No. 1931, issued on the 28th day of August, 1918), authorized and required said Southwestern Bell Telephone Company, effective on the 1st day of December, 1918, to put into effect certain increased service connection charges at its various exchanges in this State.

"And it further appearing that such toll message rates and exchange rates and service connection charges are greatly in excess of the rates and charges authorized by the Public Service Com-
31 mission of Missouri and in effect prior to the effective date of aforesaid orders of the Postmaster General.

"And it further appearing that the Supreme Court of the United States has sustained the authority of the Postmaster General to promulgate and require the collection of such toll and exchange rates during the period of its operation of the telephone systems of the United States.

"And it further appearing that, by an Act of Congress approved on July 11, 1919, the President was directed 'to return and deliver to the respective owners thereof all of the systems, lines and property taken possession of or received, operated, supervised or controlled by him under authority of said joint resolution,' and that it was also provided in said Act 'That the existing toll and exchange telephone rates as established or approved by the Postmaster General on or prior to June 6, 1919, shall continue in force for a period not to exceed four months after this Act takes effect, unless sooner modified or changed by the public authorities,—State, municipal or otherwise—having control or jurisdiction of tolls, charges and rates or by contract or by voluntary reduction.'

"And it appearing that said Act of Congress, by its terms, became effective at midnight July 31, 1919, and that the operation and control of the lines, systems and local exchanges of said Southwestern Bell Telephone Company by the Postmaster General terminated at said time.

"And it further appearing to the Commission that said Southwestern Bell Telephone Company should now be required to show cause, if any it has, why it should be permitted to continue
32 to charge the rates and charges for telephone toll and exchange service and for service connections within this State

now being charged by it as heretofore authorized by the Postmaster General."

Now, after due deliberation, it is, by the Commission,

Ordered: 1. That said Southwestern Bell Telephone Company be and it is hereby required to show cause to this Commission why it should be permitted to continue to charge the rates and charges for telephone service now rendered by it within this State and put into effect by the orders of the Postmaster General and conditionally extended by the Act of Congress for four months from August 1, 1919, including service connection charges.

Ordered: 2. That this order shall be in full force and effect on this date and that the Secretary of the Commission forthwith serve on said Southwestern Bell Telephone Company, and upon the Mayor of each of the cities mentioned in this order, a certified copy of this order, and that said Southwestern Bell Telephone Company be required to file its answer herein on or before ten days from this date and that thereafter this Commission, by usual and orderly procedure, enter into an investigation and inquiry of the matters and things involved in this order and at such hearing or hearings any person or city interested may appear and offer such evidence as may be desired.

"Your petitioner further states that on or about the — day of August, 1919, your petitioner filed the following answer to the foregoing order in said case No. 2121:

33 *Answer.*

To the Public Service Commission of the State of Missouri:

"The Southwestern Bell Telephone Company, for its answer herein, respectfully avers that it is a corporation organized and existing under and by virtue of the laws of the State of Missouri, and that on the 31st day of July, 1918, it owned, operated and maintained, and had for many years owned, operated and maintained numerous telephone exchanges and toll lines within the State of Missouri, and was subject to the jurisdiction of this Honorable Commission; that it was originally organized under the name of 'The Missouri and Kansas Telephone Company;' that on or about the 1st day of January, 1917, its name was duly and lawfully changed to the 'Southwestern Bell Telephone Company.'

"That The Missouri and Kansas Telephone Company, so long as it operated under that name, operated telephone exchanges and toll lines in the State of Kansas and in the State of Missouri exclusive of the St. Louis area.

"On the 31st day of December, 1916, the financial history of the said The Missouri and Kansas Telephone Company was as follows:

"The Missouri and Kansas Telephone Company had received for all its outstanding certificates of capital stock cash at par except that

two or three per cent of the whole amount had been issued for property; and of the whole amount of stock issued for cash, the total discount that had been allowed was less than four hundred
34 dollars. The total indebtedness of the company, consisting of bonds and notes, had been sold for cash at par except a very small amount of bonds of other companies which had been assumed as part payment for property. There was, therefore, no water in the capitalization of petitioner, but its total outstanding stock and debt represented an equivalent amount of actual cash which had been devoted and still is devoted to the use of the public.

"The Missouri and Kansas Telephone Company was organized in 1882, and from that time until 1917 it had paid dividends varying from nothing to seven per cent per annum. It had never paid a dividend higher than seven per cent, and that only for one year; it had paid six per cent for two years; it had paid five per cent three years; after 1906, and up to 1917, it paid nothing. Its average dividend during the entire period was about one and one-half per cent per annum, and the average dividend earned was no higher than the average dividend paid.

"After 1906 it neither paid nor earned any dividend: and the reason why it neither paid nor earned any dividend after that date was that it was subjected to ill-advised and uninformed competition extending throughout the territory where it operated exchanges. During most of said time it did not fully earn its interest charges.

"All of the foregoing averments were fully sustained by the undisputed testimony submitted to your Honorable Commission in the Springfield case.

"By reason of the ill-advised and uninformed competition, the history of which and the reasons for which were submitted in
35 detail in said case, the exchange rates in effect in 1916 throughout the said territory, were almost universally inadequate and the public was receiving its telephone exchange service at less than cost.

"That the general level of exchange rates was too low in 1916 is shown by the fact that The Missouri and Kansas Telephone Company earned no dividends after 1906, and by the fact that the exchange rates were found to be too low by this Honorable Commission in all the large number of cases investigated by it after its establishment in 1913.

"That on or about the 1st day of January, 1917, the Missouri and Kansas Telephone Company caused its name to be changed to the Southwestern Bell Telephone Company and purchased the property of the Bell subsidiary company which had theretofore operated in the St. Louis area. The financial history of that company was practically the same as the financial history of The Missouri and Kansas Telephone Company so far as concerned capitalization; that is to say, its stock had been sold for cash at par and it had received a dollar in cash for every dollar of outstanding indebtedness, and the proceeds of all its capital stock bonds and notes had been devoted to the service of the public; and its property was taken over and placed on

the books of the Southwestern Bell Telephone Company on such basis that the capitalization of the present company is entirely beyond criticism, and for every dollar of stock or debt now outstanding a dollar has been received and devoted to the service of the public. Said company operating in the St. Louis area from the beginning of its operations up to the time when its property was sold, on
36 or about the 1st of January, 1917, paid an average annual dividend upon its capital stock outstanding of 5.9 per cent, and the dividends paid by it during the last seven years of its operation were as follows:

1910	6 per cent.	1914	3 per cent.
1911	4 per cent.	1915	3 per cent.
1912	4 per cent.	1916	4 per cent.
1913	3 per cent.		

"And the dividends earned did not exceed the dividends paid, so that the total par value of the capitalization of the present Southwestern Bell Telephone Company represents that identical amount of money actually invested in the service of the public, no part of which has been paid back to the investors, either in unreasonable or extravagant dividends, or in any other manner.

"On August 1st, 1918, the President of the United States, pursuant to the joint resolution of Congress, took possession of the plant and business of the Southwestern Bell Telephone Company in Missouri and elsewhere. Thereafter, for the period of one year, said plant and business were possessed and controlled and operated by the President through Albert S. Burleson, Postmaster General. On or prior to May 1st, 1919, all the rates now being charged and collected by the Southwestern Bell Telephone Company in the State of Missouri were duly and lawfully authorized, promulgated and for the most part established by the President through Albert S. Burleson, Postmaster General, and said rates are now the lawful rates, and said rates were from time to time duly reported to this Honorable Commission for its information.

37 "While said rates were and are, in almost all cases, higher than the rates effective prior to the period of Federal control, they are not, and will not be, high enough to yield to the Southwestern Bell Telephone Company an adequate or reasonable return upon the amount of money it has invested in the public service in the State of Missouri, nor adequate or reasonable return upon the fair value of its property, used and useful, in giving the telephone service which it gives in the State of Missouri. No rate at this time charged by the Southwestern Bell Telephone Company is unreasonably high; most of said rates are unreasonably low.

"Throughout its history your petitioner has kept a book account of the cost of its plant as a whole; and it has such an account by States, but not by exchanges. The amount of money earned by the plant and business of the Southwestern Bell Telephone Company in the State of Missouri during the month of June, 1919, applicable, first, to reserve for replacements, second, to interest, and third, to dividends,

was only 10.95 per cent of the cost of its plant in Missouri, as shown on the said plant account.

"The income for the said month of June, 1919, included the revenue derived from exchange rates established during the period of Federal control and the revenue derived from the toll rates and the service and installation charges established during said period.

"The annual depreciation of plant, for which reserve should be made out of the annual earnings, will be for the property in the State of Missouri as a whole not less than 6.7 per cent; so that in the rate of return the per cent applicable to interest and dividends, does not exceed 4.15 per cent on the original cost as shown by the book records.

"The reason why said present rates are inadequate and unreasonably and unjustly low is that the cost of giving telephone service in the State of Missouri has enormously increased in the last three years and especially since the outbreak of the war between the United States and Germany. The general level of rates was unduly and unreasonably low in the State of Missouri in 1916. While rates have been substantially increased, the cost of giving the service has been enormously increased, so that the rates are still inadequate and unreasonably and unjustly low. It is the judgment of this defendant that the present cost of giving the service will not be diminished for a very long time, but is more likely to be increased than diminished.

"The effect of the World War began to be felt on the increased cost of giving service as early as 1915, but there was no very serious increase until 1917. After the declaration of war by the United States the cost of giving service, and the difficulties of giving service, increased by leaps and bounds. Men and girls, and especially girls, were constantly leaving the service of the Southwestern Bell Telephone Company because they could do better elsewhere, and the result was that the company had in its employ an abnormal number of new and inexperienced girls who drew the lowest pay upon the schedule, and the same was true to a considerable extent as to linemen. Wages had to be advanced from time to time to keep the service going, they were not advanced fast enough to hold in employ the usual average of experienced help.

"The following statement shows the total payrolls charged to operating expenses in the months indicated:

Southwestern Bell Telephone Company (Mo.).

State of Missouri.

Total Payrolls Charged to Operating Expenses.

(Annual Basis.)

January, 1917	$2,236,548
June, 1917	2,363,312
January, 1918	2,585,724
June, 1918	2,604,612
January, 1919	2,821,092
June, 1919	3,227,016

Increase June, 1919, over January, 1917, $990,468.
Per cent of increase June, 1919, over January, 1917, 44%.

Since June, 1919, increases in pay rolls, amounting to more than one hundred thousand dollars have been made, and the officials of the Southwestern Bell Telephone Company believe that by September 1st, 1919, additional increases will have to be made aggregating one hundred thousand dollars more.

But this is not all. If the increases which have now been made to operators are sufficient to keep them in the employ of the company the average period of service will gradually rise, which will mean an additional increase in actual expense, even though there be no further increase in the basic rate schedule. The same will be true as to linemen. Not only this, but the company as a whole is still undermanned; that is to say, the number of persons co-operating to do the necessary work is still abnormally low because of scarcity of labor, and the actual cost of giving the service will be still further increased when the number of employes returns to normal. Furthermore, there have been very large increases in the cost of materials used in maintenance, and there have been increases in the rate of taxes and in almost all other items of outgo.

The present scale of remuneration for various forms of labor engaged in giving telephone service in the State of Missouri is in no degree above the scale of remuneration to labor in other lines of industry involving the same degree of preparation, education and skill.

The cost of giving telephone service, outside return on investment, is the price which must be paid for labor and for materials and for taxes levied by the Government; and as it is estimated that seventy-five per cent of the cost of materials consists in the cost of labor, the question of the cost of giving telephone service, outside return on investment, becomes almost wholly one of labor; so that it is the belief of the telephone officials that the present cost of giving telephone service in the State of Missouri is, practically speaking, permanent unless, indeed, the cost is destined still further to increase. The officials of the telephone company do not believe it

will be possible to reduce the present labor cost in the next ten years.

It is sometimes said that in ascertaining values by which the reasonableness of rates are to be measured the amount of stocks and bonds is not very material. This, however, depends on
41 circumstances. The Southwestern Bell Telephone Company shows that all the money represented by its stocks and notes and notes and debt and bonds has been devoted to, and is now in the use of, the public. This is a state of affairs very uncommon in the case of large corporations, and it is right and proper that very serious consideration under these circumstances should be given to the amount of stocks, bonds and notes of the Southwestern Bell Telephone Company.

The accounts of this company are kept, and for a good many years have been kept, upon the system prescribed by the Interstate Commerce Commission. The Interstate Commerce Commission established a system of bookkeeping which was as nearly perfect as it could devise. That system is intended to eliminate all errors, all falsities, all possible frauds and impositions, and it has to be followed under severe penalties. There is very little possibility of difference of opinion between the accountants of the Southwestern Bell Telephone Company and the accountants of the Commission as to the foregoing allegations of fact.

To offset the very large increase in pay roll above set forth in the State of Missouri, the increase in revenue which will result from the increase in exchange rates installed May 1st, 1919, will not exceed five hundred thousand ($500,000.00) dollars.

Under its present schedule of rates in the State of Missouri the Southwestern Bell Telephone Company is not earning to exceed three and a half per cent per annum upon the fair present value of its property, used and useful, in giving its service in the State of Missouri, and is not earning five (5%) per cent per annum upon the actual original cost of its physical plant.

42 The Southwestern Bell Telephone Company therefore asks that the Commission make such investigation as it deems proper, and that after such investigation it make an order effective whenever the rates established under Federal control cease to be effective, authorizing the present rates to be charged and collected until otherwise ordered by the Commission.

Your petitioner further states that said case No. 2121 was set for hearing before the defendants on September 4th, 1919, and was thereafter continued to and heard on September 15th, 1919, and other hearings were had on the foregoing order and answer on September 15th, 16th, 17th, 26th and 27th, and October 13th and 27th, 1919, at which hearings evidence was presented by your petitioner, the City of Springfield, the defendants, and by other interested parties, all of the hearings in said matter being held at Jefferson City, Missouri.

Your petitioner further states that said cause No. 2121 was combined and consolidated by the defendants with the following cases, to-wit: Public Service Commission of Missouri v. Kansas City Long Distance Telephone Company, case No. 2133; Same v. Kansas City Telephone Company, case No. 2134; Same v. Home Telephone Com-

pany, Joplin, Missouri, case No. 2135; Same v. Kinloch Telephone Company, et al., case No. 2136; and Same v. Commercial Telephone Company, case No. 2149; in so far as the inquiry of the defendants related to toll rates or charges and charges for service connections and for moves and changes put into effect by said Albert S. Burleson, as aforesaid, and a hearing was had in said consolidated cases October 25th, 1919.

43 Thereafter, on the 26th day of November, 1919, the defendants entered their findings and conclusions in this cause No. 2121 and in said causes Nos. 2133, 2134, 2135, 2136 and 2149 in regard to toll rates, which order, findings and conclusions as to toll rates were accepted by your petitioner, and no exception was taken to the same.

Decision of Commissioner.

Thereafter, to-wit: On the 26th day of November, 1919, the defendants entered their judgments, findings and conclusions in said cause No. 2121, in regard to your petitioner's exchange rates, which said judgments, findings and conclusions are as follows, to-wit:

Report.

(By the COMMISSION:)

1. The Issues.

On August 1, 1918, pursuant to proclamation of the President of the United States under authority of an Act or Resolution of Congress, possession, control and operation of the telephone systems of the United States were taken over by the Postmaster General of the United States, and on the 13th day of December, 1918, the Postmaster General by Order No. 2495 authorized and required the Southwestern Bell Telephone Company (hereinafter called the Company), effective the 21st day of January, 1919, to charge certain new rates for telephone toll messages throughout the United States, including messages between points in this State; and thereafter the Postmaster General also authorized and required the Company, effective the 1st day of May, 1919 (except as to Charleston

44 and Kirksville, effective July 1, 1919), to charge increased rates for telephone exchange service at its exchanges in sixty-five cities and towns in this State; and also on the 18th day of November, 1918, the Postmaster General, by order No. 2352, authorized and required the Company, effective the 1st day of December, 1918, to put into effect certain new installation and moving charges at its exchanges in this State.

Thereafter by an Act of Congress on July 11, 1919, the President was directed "to return and deliver to the respective owners thereof all of the systems, lines and property taken possession of or received, operated, supervised or controlled by him under authority of said joint resolution," and it was also provided in said Act "that the existing toll and exchange telephone rates, as established or approved by the Postmaster General on or prior to June 6, 1919, shall continue

in force for a period not to exceed four months after this Act takes effect, unless sooner modified or changed by the public authorities, state, municipal or otherwise, having control or jurisdiction of tolls, charges and rates or by contract or by voluntary reduction." Said Act of Congress, by its terms became effective at midnight July 31, 1919, and as a result the rates promulgated by the Postmaster General would cease at midnight November 30, 1919, unless continued in effect or modified by order of this Commission.

Thereafter on August 4, 1919, this Commission issued its order directing the Company to appear and show cause why it should be permitted to continue to charge the rates and charges for telephone service now rendered by it within this state and put into effect by the Postmaster General.

45 Notices of the hearing on this order were served on the Mayor of each of the cities and towns interested, the Company and a number of the cities and towns filed answer or pleas, and general hearings have been held at the office of the Commission on September 15 and 26, October 13, 27 and 28, and November 6, 1919, at which hearings a large volume of evidence was introduced, principally by the Company, touching the value of the Company's property, its revenues and expenses, and the reasonableness of the rates promulgated by the Postmaster General for it in this state. The case has also been briefed and argued by counsel for the Company and counsel for a number of the towns and cities.

We have determined by separate order to permit the Company to continue the Postmaster General's rates for long distance messages in effect for a further test period, and have also by separate order disallowed the installation and moving charges, and will therefore fix only rates for exchange service in this report and order.

It is insisted by the Company that because of increased wages and other increased operating expenses which it is paying, the present rates are necessary and should be continued in effect, while on the other hand it is insisted by counsel for the towns and cities that these rates are excessive and the Commission should not continue them in effect, and also that the Commission should hold separate hearings and render separate findings and orders with reference to rates for the different localities or exchanges.

Because of the largely increased volume of work in other cases, as well as in these telephone cases now pending before the Commission, it has been impossible for the Commission to hold local

46 hearings in each of the communities interested prior to November 30, 1919, and the only thing that we can do at this time is to examine the record before us and fix temporary rates for each of the exchanges.

2. Value of the Property.

The Company offered in evidence exhibits showing the value of its property in the entire state (outside the cities of Kansas City and Independence, whose rates are not involved in this case), and also at forty-six of its local exchanges in the state. It shows by such

exhibits that the value of the property in the entire state (and when speaking of the property in the state in this report we mean exclusive of Kansas City and Independence) is as follows: Reproduction cost new, $35,100,471; reproduction cost new, less depreciation, $31,355,278; and cost as per books, $22,888,943. It also shows the Company's estimate of reproduction cost new, reproduction cost new less depreciation, and the prorated book cost, at each of the forty-six local exchanges mentioned.

The engineers of this Commission have made a detailed inventory and appraisal and this Commission has formally valued the Company's property at only three of its exchanges, viz: at the City of Caruthersville, reported in re Southwestern Tel. & Tel. Company, 2 Mo. P. S. C. 492; at the City of St. Louis in cases No. 234 and No. 235 as yet unreported; and at the City of Springfield reported in re. Missouri and Kansas Telephone Company, 6 Mo. P. S. C. 279, and as a result we have only the estimates and appraisals of the Company before us in relation to the value of the property at
47 the other exchanges. We think it is clear, however, from the data at hand that the values placed by the Company upon the property are excessive and not a just basis for rate making.

The values fixed by this Commission at Caruthersville, St. Louis and Springfield in the cases above mentioned aggregate $11,003,898, while the Company estimates the aggregate cost of reproduction new of these plants in this case at $18,971,011. The ratio of the latter figure is 172.4 per cent. This percentage divided into $35,100,471, the Company's estimate of the aggregate cost of the reproduction new of its property in Missouri in this case, equals $20,350,000, which might be said to be one measure of the value of the property.

Again, the Company's estimate of the aggregate cost of reproduction new, less depreciation, of its properties at Caruthersville, St. Louis and Springfield, in this case is $16,913,673. The ratio of this figure to the aggregate value fixed by the Commission at these exchanges, plus additions reported by the Company, is 153.7 per cent. This percentage divided into $31,355,278, the Company's estimate of the aggregate cost of reproduction new, less depreciation, of its property in Missouri in this case, equals $20,400,000, which may be said to be another measure of the value of the property.

The Company also shows by exhibits 19 and 212 that its return under the Postmaster General's rates on $22,888,942, the book value of its property in the state, is at the rate of 11.65 per cent per annum for depreciation and return on the investment, which would yield the Company 6 per cent for depreciation and 5.65 per cent for return on the book cost of the property. As stated, however, we do not think that the book cost or the "prorated book cost"
48 of the property as claimed by the Company would be a fair basis for rate making.

As we understand it, the "prorated book cost" given in evidence by the Company for the various exchanges is simply the percentage relation of reproduction cost new, which the original cost of all property bears to repr-duction cost new of all property and in in-

dividual instances the actual cost might vary greatly, either up or down, from what an appraisal would show. If the Company, to eliminate competition, paid a price in excess of the value or because of discouraged local operation were enabled to purchase a plant far below its actual value, the "prorated book cost" basis would not reflect anything like the original cost.

We also think that the figure of $22,888,943, claimed by the Company to represent the book cost or original of the property cost in the state, is subject to certain adjustments with reference to the amount of non-useful property included, working capital, and the amount to be deducted account extinguished value recouped from patrons by charges to depreciation.

In the St. Louis case, supra, the original cost of the non-useful property deducted and disallowed by the Commission amounted to $454,689.16. It appears from the Company's exhibit 256 that the "prorated book cost" of the St. Louis exchange is just about half of that given for the state. However, it is clear that the proportion of non-used and non-useful property in St. Louis bears a much larger percentage relation to useful property than would obtain throughout the state. It would appear that estimating the Company's property not used and useful for the entire state at $500,000 would be a fair approximation. This sum at least should be deducted.

49 Working capital for the property in the state is estimated by the Company at $1,051,184. It appears from the Company's exhibit 23 that the amount of working capital allowed by this Commission in the St. Louis case, supra, equaled 14.7 per cent of the total gross annual revenue and this percentage is used by the Company in fixing working capital for the St. Louis exchange in this case. If we apply this same percentage, 14.7 per cent, to the total gross revenue for the state as indicated by the Company's exhibit 20, we have:

Total operating Revenue, 4 months	$2,343,924.00
Equivalent to annual figure of	7,031,772.00
And 14.7 per cent equals	1,033,670.48

This is $17,513.52 less than the working capital shown on Company's Exhibit No. 19.

The depreciation reserve applicable to the Missouri property is not shown by the Company. However, on the Company's exhibit 15, the balance sheet as of June 30, 1919, of the Southwestern Bell Telephone Company (Missouri Corporation) operating in Missouri, Kansas and Arkansas, the reserve for accrued depreciation and reserve for amortization of intangibles is given as $7,963,082.37. The same exhibit shows the original cost of fixed capital for Missouri, Kansas and Arkansas property as $46,061,162.76. The total fixed capital of the Missouri property shown on the Company's exhibit 19 is $21,837,759, which is 47.4 per cent of $46,061,162.76 and 47.4 per cent of the reserve for depreciation. $7,963,082.37 equals $3,774,501 or the portion assignable to the Missouri property.

50 Adjusting in accordance with the above, we have:

Total plant & equipment, including Working Capital, as per Company's Exhibit No. 19.....		$22,888,943.00
Deduct property not used or useful.	$500,000.00	
Deduct excess working capital....	17,513.52	
Deduct Depreciation Reserve.....	3,774,501.00	
		4,292,014.52
		$18,596,928.48
Add for Intangibles, 10%.....		1,859,692.85
Total Adjusted Original Cost		$20,456,621.33

After carefully considering all the evidence as to values before us in this case, we are of the opinion that the value of the Company's property in the state, exclusive of Kansas City and Independence, devoted to exchange service, will not exceed the sum of $20,400,000, and we will tentatively adopt this sum as the value of the property for the purposes of this case. As stated, supra, this Commission has formally valued only a part of this property, and we should not be understood as authoritatively fixing the value of the property at this time.

3. Revenues and Expenses.

It appears from the Company's exhibits 19, 20 and 212, that its net profit on operations, available for depreciation and return on the investment, on its exchange property in the state, outside of Kansas City and Independence, for the months of May, June, July and August, 1919, amounted to the sum of $889,023, which is equivalent to an annual return of $2,667,069; and which would amount to a return of 11.65 per cent per annum for depreciation and return on the book value or original cost of $22,888,943 claimed by the Company.

51

We are of the opinion, however, that the net profit on operations as shown on said exhibits 19, 20 and 212 is subject to adjustment with reference to the proportion of the 4½% allowance paid to the American Tel. and Tel. Company and with reference to toll revenues and the strike expense.

In the St. Louis case, supra, this Commission did not allow the 4½% of gross revenue paid by the Company to the parent Company, the American Tel. and Tel. Company, as rentals on receivers, transmitters, and induction coils and for alleged valuable services rendered, but did allow the Company to capitalize these instruments. It appears from the evidence in the St. Louis case that by capitalizing these instruments, allowing for repairs, and granting a 10 per cent rate of depreciation on the instruments, the cost to the Company would be 55 per cent less than the 4½ per cent allowance on gross revenue.

The Company's exhibit 20 which details the make-up of the $889,023 available for depreciation and return on the investment shows that the 4½% of gross revenue paid by the Company amounted to $105,484 for the four months, or equivalent to an

annual figure of $316,452. Fifty-five per cent of this sum would be $174,048.60, which should be added to the above figure of $2,667,069.

52 Since the rates in the St. Louis case, supra, were put in for a test period, the Commission has not considered its decision therein with reference to the 4½ per cent payment final and has intended to more fully review the cases involving such question, but as yet have not been able to do so. However, we have concluded to adhere to our decision therein for the purpose of temporary rates in this case.

The annual increase in toll revenue under the Postmaster General's rates was estimated by Mr. Hale at $100,000 per annum for the Missouri property. Mr. Barry estimates that under conditions prevailing after the classified toll rate schedule was effective, with 21 per cent of traffic on station to station basis, the increase would be $116,500 per year, but that by the end of the year when it is estimated that the station to station basis will be 40 per cent, the increase will be about $63,500. As the increase in station to station basis is conjectural as under present conditions Mr. Barry's estimate is $116,500, it appears that the $100,000 figure of Mr. Hale is reasonable. An increase of $100,000 per year means $8,333.33¼ per month and as the four months taken as a base upon which to estimate the year's results contain only 2½ months of the toll increase there should be added 1½ times $8,333.33¼ or $12,500 to cover the 1½ months omitted from the four months' period and this sum $12,500 multiplied by 3 to annualize it gives $37,500, which should be added to the year's net profit on operations as shown.

The strike expense mentioned on exhibits refers to the strike started in St. Louis about June 27, 1919. Mr. Scott, Auditor for the Company, furnished the information that this expense

53 amounted to $250,000 during the four months' period. It appears that this $250,000 should be amortized over a period of five years. This would be $50,000 per year, which should be deducted from the net profit on operation as shown by the Company.

The revenues for the four months' period contain the increased revenue due to installation and kindred charges. These, according to Mr. Barry, approximate $118,014 per year, based on seven months' actual figures (see Exhibit 82).

Adjusting the net profit on operations in line with foregoing suggestions, we have:

Company's figure (4 months $889,023) per year...	$2,667,069.00
Add account adjustments of 4½% payment.....	174,048.60
Adjust toll to show year's results.....	37,500.00
	$2,878,617.60
Deduct year's proportion of strike expenses.....	50,000.00
Estimated annual net profit on operations..	$2,828,617.60

This figure divided by the tentative fair present value of $20,400,000 leaves 13.9 per cent per annum available for depreciation, return, surplus and contingencies under the rates of the Postmaster General. After deducting six per cent for depreciation there remains 7.9 per cent available for return, surplus and contingencies.

51 4. Reasonable Rates.

Section 93 of the Public Service Commission Act in prescribing the duties and powers of the Commission in fixing rates provides that:

"Whenever the Commission shall be of the opinion after a hearing had upon its own motion or upon a complaint that the rates * * * collected by any telephone corporation * * * are unjust, unreasonable * * *, the Commission shall with due regard, among other things, to a reasonable average return upon the value of the property actually used in the public service and of the necessity of making reservation out of income for surplus and contingencies, determine the just and reasonable rates, charges and rentals to be thereafter observed and in force as the maximum * * *."

In view of the fact, among others, that the Company's net profit on operations for its exchange service in the state under Postmaster General's rates amounts to 13.9 per cent per annum for depreciation and return, we find that the Company's present rates for said service are unjust and unreasonable, and we have proceeded to determine and fix what we consider just and reasonable rates for each of the Company's exchanges in the state, outside of Kansas City and Independence, under all of the existing conditions. In order to avoid repetition, we have specified the rates so fixed for each exchange in the order alone and not in this report.

We have also specified in the order the amount of the reduction in the revenue of the Company, per annum, resulting from our readjustment of the Postmaster General's rates at a number
55 of the Company's exchanges, and it will be found that the aggregate amount of the reductions at all of the exchanges where reductions were made will amount to $91,194.30 per annum. We have also issued an order simultaneously herewith in Cases No. 2121, No. 2128, No. 2129, No. 2130, No. 2131, No. 2132, No. 2133, No. 2134, No. 2135, No. 2136, and No. 2149, disallowing the installation and moving charges promulgated by the Postmaster General and we estimate that the disallowance of these rates will reduce the revenue of the Southwestern Bell Telephone Company in the sum of approximately $118,000 per annum.

After deducting the reductions in exchange rates in the sum of $91,194.30 and the loss of the installation and moving charges in the sum of $118,000 from $2,828,617.60, the Company's net annual profit on operations for depreciation and return, there is left the sum of $2,619,423.30 for depreciation and return or 6 per cent per annum for depreciation and 6.81 per cent per annum for return, on the tentative value of $20,400,000.

We will also put in the rates for a temporary period of thirteen months from the effective date of the order, unless otherwise ordered, with the provision that the rates of the Company for exchange service at each of its exchanges in the state shall be reduced and restored by the Company to the rates for such exchange service on file and charged by it on April 30, 1919, with the further provision that the Commission may by order at any time hereafter continue the rates fixed herein for another or further period or otherwise change or modify the said rates of the Company.

An order will issue accordingly.

56 *Order.*

This case being at issue upon the order of the Commission and pleadings of the parties, and hearings having been duly held herein, and the Commission having on the date hereof filed its report, containing its findings and conclusions thereon, which report is hereby referred to and made part hereof,

It is, therefore,

Ordered: 1. That the Southwestern Bell Telephone Company be authorized and permitted to continue to charge and collect for the temporary period of thirteen months specified herein, unless hereafter otherwise ordered by the Commission, all the rates for telephone exchange service as authorized and required by the Postmaster General of the United States at its exchanges at the sixty-five cities or towns in this state hereinafter named, excepting where the Commission has herein reduced said rates prescribed by the Postmaster General, which reductions are also hereinafter specified, and which reduced rates may also be charged and collected by said Southwestern Bell Telephone Company during said temporary period of thirteen months unless hereafter otherwise ordered by the Commission.

Ordered: 2. That the reductions ordered herein as above mentioned in the rates prescribed by the Postmaster General are as follows:

57

Exchange.	Class of service.	Direct line.	2-party.	4-party.
Armstrong, Mo.:				
	Business (P. M. General)	$2.50	.....	.....
	Business (Reduced rates)	2.00	.....	.....
	Estimated amount of reduction in revenue, per annum, $132.00.			
Aurora, Mo.:				
	No Change.			

Exchange.	Class of service.	Direct line.	2-party.	4-pa
Benton, Mo.:				
	Business (P. M. General)	$2.50	.....	....
	Business (Reduced Rates)	2.00	.....	....
	Estimated amount of reduction in revenue per annum, $66.00.			
Bismarck, Mo.:				
	Business (P. M. General)	$2.50	.....	....
	Business (Reduced Rates)	2.25	.....	....
	Residence (P. M. General)	1.50	.....	....
	Residence (Reduced Rates)	1.25	.....	....
	Estimated amount of reduction in revenue, per annum, $282.00.			
Bloomfield, Mo.:				
	Business (P. M. General)	$2.50	.....	....
	Business (Reduced Rates)	2.25	.....	....
	Residence (P. M. General)	1.50	.....	....
	Residence (Reduced Rates)	1.25	.....	....
	Estimated amount of reduction in revenue, per annum, $449.00.			
Blue Springs, Mo.:				
	Business (P. M. General)	$2.50	.....	....
	Business (Reduced Rates)	2.25	.....	....
	Estimated amount of reduction in revenue, per annum, $66.00.			
Brookfield, Mo.:				
	Business (P. M. General)	$3.50	.....	....
	Business (Reduced Rates)	3.00	.....	....
	Estimated amount of reduction in revenue, per annum, $990.00.			
Campbell, Mo.:				
	Business (P. M. General)	$2.75	.....	....
	Business (Reduced Rates)	2.50	.....	....
	Residence (P. M. General)	1.75	.....	....
	Residence (Reduced Rates)	1.50	.....	....
	Estimated amount of reduction in revenue, per annum, $271.50.			

Exchange.	Class of service.	Direct line.	2-party.	4-party.
Carrollton, Mo.:				
	Business (P. M. General)	$3.50	.....	.....
	Business (Reduced Rates)	2.75	.....	.....
	Residence (P. M. General)	2.00	$1.75	.....
	Residence (Reduced Rates)	1.75	1.50	.....
	Estimated amount of reduction in revenue, per annum, $3,048.00.			
58				
Caruthersville, Mo.:				
	No Change.			
Chaffee, Mo.:				
	No Change.			
Charleston, Mo.:				
	No Change.			
Chillicothe, Mo.:				
	Business (P. M. General)	$4.00	.....	.....
	Business (Reduced Rates)	3.25	.....	.....
	Estimated amount of reduction in revenue, per annum, $2,367.00.			
Clarkton, Mo.:				
	Business (P. M. General)	$2.50	.....	.....
	Business (Reduced Rates)	2.25	.....	.....
	Estimated amount of reduction in revenue, per annum, $126.00.			
Clayton, Mo.:				
	Business (P. M. General)	$3.50	.....	.....
	Business (Reduced Rates)	3.25	.....	.....
	Estimated amount of reduction in revenue, per annum, $237.00.			
Dexter, Mo.:				
	Business (P. M. General)	$2.75	.....	.....
	Business (Reduced Rates)	2.50	.....	.....
	Residence (P. M. General)	1.75	.....	.....
	Residence (Reduced Rates)	1.50	.....	.....
	Estimated amount of reduction in revenue, per annum, $855.00.			

Exchange.	Class of service.	Direct line.	2 party.	4 party.
East Prairie, Mo.:				
	Business (P. M. General)	$2.50		
	Business (Reduced Rates)	2.25		
	Residence (P. M. General)	1.50		
	Residence (Reduced Rates)	1.25		
	Estimated amount of reduction in revenue, per annum, $282.00.			
Essex, Mo.:				
	Business (P. M. General)	$2.50		
	Business (Reduced Rates)	2.25		
	Estimated amount of reduction in revenue, per annum, $63.00.			
Eureka, Mo.:				
	Business (P. M. General)	$2.50		
	Business (Reduced Rates)	2.25		
	Estimated amount of reduction in revenue, per annum, $63.00.			
Fayette, Mo.:				
	No Change.			
59				
Ferguson, Mo.:				
	No Change.			
Glasgow, Mo.:				
	Business (P. M. General)	$2.75		
	Business (Reduced Rates)	2.50		
	Residence (P. M. General)	1.75		
	Residence (Reduced Rates)	1.50		
	Estimated amount of reduction in revenue, per annum, $408.60.			
Glenwood, Mo.:				
	No Change.			
Grain Valley, Mo.:				
	Business (P. M. General)	$2.50		
	Business (Reduced Rates)	2.00		
	Estimated amount of reduction in revenue, per annum, $84.00.			

Exchange	Class of service	Direct line, 2-party	4-party
Greenwood, Mo.:			
No Change.			
Hayti, Mo.:			
Business (P. M. General)		$2.50	
Business (Reduced Rates)		2.25	
Residence (P. M. General)		1.50	
Residence (Reduced Rates)		1.27	
Estimated amount of reduction in revenue, per annum, $270.00.			
Hammond, Mo.:			
Business (P. M. General)		$ .50	
Business (Reduced Rate)		.01	
Residence (P. M. General)		.50	2.00
Residence (Reduced Rates)		2.25	1.75
Estimated amount of reduction in revenue, per annum, $1,125.00.			
Higbee, Mo.:			
Business (P. M. General)		$2.50	
Business (Reduced Rates)		2.25	
Residence (P. M. General)		1.50	
Residence (Reduced Rates)		1.27	
Estimated amount of reduction in revenue, per annum, $210.00.			
Hornersville, Mo.:			
Business (P. M. General)		$2.50	
Business (Reduced Rate)		2.25	
Residence (P. M. General)		1.50	
Residence (Reduced Rates)		1.27	
Estimated amount of reduction in revenue, per annum, $147.00.			
Kirksville, Mo.:			
No Change.			
(0)			
Lamar, Mo.:			
No Change.			
Lancaster, Mo.:			
No Change.			

Exchange. Class of service.	Direct line.	2-party.	4-par
Lees' Summit, Mo.:			
Business (P. M. General)	$3.00	.....	....
Business (Reduced Rates)	2.50	.....	....
Residence (P. M. General)	2.00	$1.50	....
Residence (Reduced Rates)	1.75	1.25	....
Estimated amount of reduction in revenue, per annum, $1,365.00.			
Lilbourn, Mo.:			
Business (P. M. General)	$2.50	.....	....
Business (Reduced Rates)	2.25	.....	....
Estimated amount of reduction in revenue, per annum, $54.00.			
Malden, Mo.:			
No Change.			
Marceline, Mo.:			
Residence (P. M. General)	$1.75	$1.50	.....
Residence (Reduced Rates)	1.50	1.25	.....
Estimated amount of reduction in revenue, per annum, $1,494.00.			
Marionville, Mo.:			
No Change.			
Marshall, Mo.:			
Business (P. M. General)	$3.50	.....	.....
Business (Reduced Rates)	3.00	.....	.....
Estimated amount of reduction in revenue, per annum, $1,386.00.			
Mexico, Mo.:			
No Change.			
Moberly, Mo.:			
Business (P. M. General)	$1.00	.....	.....
Business (Reduced Rates)	3.50	.....	.....
Residence (P. M. General)	2.25	$2.00	.....
Residence (Reduced Rates)	2.00	1.75	.....
Estimated amount of reduction in revenue, per annum, $6,522.00.			
Monett, Mo.:			
No Change.			

Exchange.	Class of service.	Direct line.	2-party.	4-party.
Neosho, Mo.:				
	No Change.			
Noel, Mo.:				
	Business (P. M. General)	$2.50	.....	.....
	Business (Reduced Rates)	2.00	.....	.....
	Estimated amount of reduction in revenue, per annum, $78.00.			
61				
Oran, Mo.:				
	Business (P. M. General)	$2.50	.....	.....
	Business (Reduced Rates)	2.25	.....	.....
	Estimated amount of reduction in revenue, per annum, $96.00.			
Pierce City, Mo.:				
	No Change.			
Poplar Bluff, Mo.:				
	Business (P. M. General)	$4.00	.....	.....
	Business (Reduced Rates)	3.25	.....	.....
	Estimated amount of reduction in revenue, per annum, $2,314.00.			
Portageville, Mo.:				
	No Change.			
Republic, Mo.:				
	No Change.			
St. Clair, Mo.:				
	Business (P. M. General)	$2.50	.....	.....
	Business (Reduced Rates)	2.25	.....	.....
	Estimated amount of reduction in revenue, per annum, $72.00.			
St. Joseph, Mo.:				
	Business (P. M. General)	$6.50	$5.00	.....
	Business (Reduced Rates)	6.00	4.75	.....
	Estimated amount of reduction in revenue, per annum, $11,496.00.			

Exchange.	Class of service.	Direct line.	2-party.	4-party.
St. Louis, Mo.:				
	Business (P. M. General)	$9.00	.....	.....
	Business (Reduced Rates)	8.50	.....	.....
	Estimated amount of reduction in revenue, per annum, $31,818.00.			
Sedalia, Mo.:				
	Business (P. M. General)	$4.00	$3.50	.....
	Business (Reduced Rates)	3.50	3.00	.....
	Estimated amount of reduction in revenue, per annum, $3,206.00.			
Seligman, Mo.:				
	No Change.			
Senath, Mo.:				
	Business (P. M. General)	$2.50	.....	.....
	Business (Reduced Rates)	2.25	.....	.....
	Residence (P. M. General)	1.50	.....	.....
	Residence (Reduced Rates)	1.25	.....	.....
	Estimated amount of reduction in revenue, per annum, $414.00.			
Sikeston, Mo.:				
	Business (P. M. General)	$3.50	.....	.....
	Business (Reduced Rates)	3.00	.....	.....
	Estimated amount of reduction in revenue, per annum, $828.00.			
62				
Slater, Mo.:				
	No Change.			
Smithville, Mo.:				
	Business (P. M. General)	$2.50	.....	.....
	Business (Reduced Rates)	2.25	.....	.....
	Residence (P. M. General)	1.75	.....	.....
	Residence (Reduced Rates)	1.50	.....	.....
	Estimated amount of reduction in revenue, per annum, $285.00.			
Southwest City, Mo.:				
	Business (P. M. General)	$2.50	.....	.....
	Business (Reduced Rates)	2.00	.....	.....
	Estimated amount of reduction in revenue, per annum, $126.00.			

Exchange.	Class of service.	Direct line.	2-party.	4-party.
Springfield, Mo.:				
	Business (P. M. General)	$5.50	.....	.....
	Business (Reduced Rates)	5.00	.....	.....
	Estimated amount of reduction in revenue, per annum, $7,596.00.			
Stanberry, Mo.:				
	Business (P. M. General)	$2.75	.....	.....
	Business (Reduced Rates)	2.50	.....	.....
	Estimated amount of reduction in revenue, per annum, $222.00.			
Trenton, Mo.:				
	Business (P. M. General)	$3.50	.....	.....
	Business (Reduced Rates)	3.00	.....	.....
	Estimated amount of reduction in revenue, per annum, $1,176.00.			
Valley Park, Mo.:				
	No Change.			
Washburn, Mo.:				
	Business (P. M. General)	$2.50	.....	.....
	Business (Reduced Rates)	2.00	.....	.....
	Estimated amount of reduction in revenue, per annum, $24.00.			
Webster Groves, Mo.:				
	Business (P. M. General)	$4.50	$4.00	.....
	Business (Reduced Rates)	4.25	3.75	.....
	Estimated amount of reduction in revenue, per annum, $870.00.			
Wentworth, Mo.:				
	Business (P. M. General)	$2.50	.....	.....
	Business (Reduced Rates)	2.00	.....	.....
	Estimated amount of reduction in revenue, per annum, $66.00.			

63 Aggregate amount of reduction in revenue, per annum, at all of the above exchanges where reductions have been made herein, $91,194.30.

The above words "Business (P. M. General)," refers to the rates promulgated by the Postmaster General; the above words "Reduced Rates" refer to the reductions made by the Commission herein in

the rates of the Postmaster General; and the rates specified above refer to monthly rates at the respective exchanges.

Ordered: 3. That the Southwestern Bell Telephone Company be permitted to put into effect on December 1, 1919, the schedules of exchange rates fixed in this order, and may file with the Commission on or before January 1, 1920, schedules containing said rates applicable to its respective exchanges, to be effective under the following terms and conditions:

Ordered: 4. That said rates fixed in this order for exchange service shall be and remain in effect for a temporary period of thirteen months from and after December 1, 1919, at the end of which period such rates shall, without further order of the Commission, cease, and the rates for said service shall then be reduced and restored by the Southwestern Bell Telephone Company to the rates on file and charged by it for such exchange service on April 30, 1919; provided that the Commission may hereafter at any time by further order continue the said rates fixed herein for another or further period or otherwise change or modify the rates of said Company for such service.

Ordered: 5. That the Southwestern Bell Telephone Company be required to keep a full and accurate account of the revenue received by it for exchange service at each of its exchanges named
64 in this order together with its expenses incurred in relation thereto for a period of twelve months from December 1, 1919, and file a verified report of said revenues and expenses with the Commission at the expiration of one year from December 1, 1919, which report shall be in addition to any other reports required by law; and that the Commission fully retain jurisdiction of the parties and subject matter of this cause, to continue, change or modify the rates fixed in this order upon the expiration of said period of thirteen months, or at any other time hereafter, upon the evidence and facts now before the Commission, or such other evidence as said Company or any interested parties may offer.

Ordered: 6. That this order shall take effect on December 1, 1919, and that the Secretary of the Commission forthwith serve upon parties hereto, a certified copy of this order, and that the Southwestern Bell Telephone Company shall notify the Commission within ten days after receiving copy of this order in the manner required by Section 25 of the Public Service Commission Act whether the terms of this order are accepted and will be obeyed.

Thereafter, to-wit, on the 26th day of November, 1919, defendants entered their judgments, findings and conclusions in said causes Nos. 2121, 2133, 2134, 2135, 2136 and 2149, in regard to said charges for service connections and charges for moves and changes, which judgments, findings and conclusions are as follows, to-wit:

Report and Order.

65 The Commission having heretofore entered orders in Case Nos. 2121, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136 and 2149, requiring the telephone companies named as defendants therein, as set forth in the foregoing caption of this report and order, to appear and show cause to this Commission, if any, why they should be permitted to continue to collect and receive within this State the charges authorized by the Postmaster General of the United States by his Order No. 2352, effective on the 1st day of December, 1918, providing for charges for service connection and move charges, which said charges were continued in effect by Act of Congress until the 1st day of December, 1919. Said cases were duly heard together and submitted for decision. The ruling of the Commission upon the propriety of continuing in force the charges for service connection and move charges as prescribed by the Postmaster General beyond the 1st day of December, 1919, follows: The charges for telephone service under consideration here will be divided for convenience into two classes: (1) Charges for service connections; (2) Charges for moves and changes. The charges now in force for service connections, as fixed by the Postmaster General, effective the 1st day of December, 1918, are as follows:

1. For individual and party line service..... $3.50
2. For each extension station connected with any class of telephone service..... 3.50

66

3. For Private Branch Exchange service the charge for establishing service connection;
   (*a*) For each trunk line connecting the Private Branch Exchange with a central office..... 3.50
   (*b*) For each telephone connected to the Private Branch Exchange, except operators' telephone sets..... 3.50
4. To cover directory, account circuit and switchboard expenses in cases where service is established by the use of instrumentalities already in place in the subscribers' premises and no change is made in the type or location of such instrumentalities..... 1.50

The charges for moves and changes are as follows:

1. Charges for changes of location of telephone equipment or wiring on the subscribers' premises on and after December 1, 1918, to be:
   (*a*) For moving a telephone set from one location to another on the same premises, a charge of..... $3.00
   (*b*) For moving any other equipment or wiring from one location to another on the same premises, a charge based on the cost of labor and material.

2. Charges for changes other than moves, in wiring and equipment on the subscribers' premises, made on the initiative of the subscriber to be:

(*a*) For change in type or style of telephone set, a charge of..... 3.00

67

(*b*) For other changes in equipment or wiring, a charge based on the cost of labor and material.

3. The charges specified above not to apply if the changes or moves are required for the proper maintenance of the equipment or service.

4. The charges specified above not to apply if the changes are required because of a change in the class or grade of service.

5. The charges specified above in no case to exceed the service connection charge applicable to the entire service of the particular subscriber.

Service Connection Charge.

The propriety of continuing this service connection charge will be considered first. The service connection charges are levied against all new subscribers for telephone service in addition to the regular monthly exchange rates paid by all subscribers for telephone service and the service connection charge as provided must be paid before telephone service will be furnished to new subscribers. The amount of the charge is $3.50, excepting in cases where there is no change made in equipment upon the subscriber's premises; then it is $1.50.

The service connection charge is rested upon the theory that a large number of telephone subscribers use the service for a short time, and that in addition to the usual exchange rates paid by all subscribers for telephone service the new subscribers should

68 pay additional charges toward reimbursing the company for the cost incurred in putting in and taking out telephone equipment to meet the needs of the short time users.

The Commission holds that the service connection charges as authorized by the Postmaster General should be discontinued entirely. The ruling of the Commission in the case of Simms v. Columbia Telephone Company, 2 Mo. P. S. C. 256, which was affirmed by the Supreme Court, State ex rel. v. Atkinson, 271 Mo. 36, 37, is invoked against it.

The service connection charge is unreasonable and constitutes unlawful discrimination against the new subscribers for telephone service.

A telephone company is required by law to furnish the wires and instruments necessary to accommodate its patrons and is entitled to add the cost thereof to its plant account, upon which it is entitled to earn a fair return, and should not be permitted to shift any part

of that burden to telephone subscribers by means of a charge against new subscribers as now provided.

The charges now in force apply to all new subscribers, regardless of whether they become users of the service for a short or a long time. In the case of Bradford v. Citizens Telephone Company, 161 Mich. 385, the Court said:

"While it is probably true that the cost of operating a telephone exchange increases with the increased volume of business, it is equally true that the whole body of subscribers, whether new or old, makes the added expense, and reaps the added benefit. A telephone exchange with 1,000 members is manifestly more valuable to every subscriber than one with 100 members, but it is equally
69 valuable to each member in the same class, and its value to the subscriber does not depend, in any degree, upon whether he is a new subscriber or an old one. It is difficult to understand why new subscribers should pay any more for the right to talk to old members than the latter do for the right to talk to new ones."

The cost to the telephone company for serving a new subscriber for long time service is not greater than the cost of serving an old subscriber for long time service, yet under the service connection charge the new subscriber who continues the service will pay a higher rate for the same service than the old subscriber will pay.

The service connection charge as now in effect requires the new subscribers for telephone service to pay more for the same service than is paid by the subscribers who began to take service before the service connection charge was put in force, hence, the service connection charge is an unlawful discriminaton against the new subscribers. Subsections 2 and 3, Section 87, P. S. C. L.

For the reasons set out above this Commission holds that the service connection charge should be discontinued on and after the 1st day of December, 1919.

Charges for Moves and Changes.

Before the Federal control of telephone companies was inaugurated a large number of such companies had filed with the Commission schedules of rates containing charges for the kind of work embraced in the Federal charges for moves and changes. If the Federal charges are not authorized by the Commission, the
70 charges for moves and changes as heretofore filed with the Commission will become effective on the 1st day of December, 1919. The cost of moves and changes of telephones is not uniform in each locality. The Commission will not approve any sum as a standard to be applied to all companies for moves and changes and will not sanction a continuance of the Federal rates for moves and changes. Telephone companies desiring to begin such charges may seek to do so by appropriate proceedings for that purpose.

Accordingly, it is,

Ordered: 1. That the Southwestern Bell Telephone Company, Case No. 2121; the Cass County Telephone Company, Case No.

2128; the Missouri Central Telephone Company, Case No. 2129; The Boonville Telephone Company, Case No. 2130; the Buffum Telephone Company, Case No. 2131; the Pattonsburg Home Telephone Company, Case No. 2132; the Kansas City Long Distance Telephone Company, Case No. 2133; the Kansas City Telephone Company, Case No. 3134; the Home Telephone Company of Joplin, Case No. 2135; the Kinloch Telephone Company, the Kinloch Long Distance Telephone Company of Missouri, the Suburban Telephone Company, the Sedalia Home Telephone Company, Case No. 2136; the Commercial Telephone Company, Case No. 2149, have failed to show good cause to this Commission for the continuance in force and effect of the charges prescribed by the Postmaster General by his Order No. 2342 for service connections and moves of telephones, and said telephone companies as named above in Section No. 1 of this order are hereby directed to discontinue such
71 charges for service connections and moves of telephones within this State on and after the 1st day of December, 1919.

Ordered: 2. That this report and order shall be in full force and effect on and after the 1st day of December, 1919.

Ordered: 3. That the Secretary of the Commission forthwith serve a copy of the report and order herein upon each of the telephone companies named in Section No. 1 of this order and upon the Mayors of the cities and towns in which said companies are doing business.

Ordered: 4. That the telephone companies named in Section No. 1 of this order notify the Commission within ten days after the receipt of a copy of the report and order herein, in the manner prescribed by Section 25 of the Public Service Commission Law, whether the terms of this order are accepted and will be obeyed.

Your petitioner further states that all of the defendants except defendant Noah W. Simpson, concurred in the above judgments, findings and conclusions of the defendants in regard to exchange rates and charges for service connections and charges for moves and changes, but said defendant Noah W. Simpson dissented from the other defendants and filed a dissenting opinion, a true copy of which is hereto attached, made a part hereof and marked Exhibit A; and that defendant William G. Busby filed a concurring opinion, a true copy of which is hereto attached, made a part hereof and marked Exhibit B; and that defendant Edward Flad filed a concurring statement and opinion dissenting from the Commission's opinion relating to service connection charges and charges
72 for moves and changes, but concurring in the order relating to the same, a true copy copy of which is hereto attached, made a part hereof and marked Exhibit C.

Thereafter, to-wit: on the 29th day of November, 1919, and before the effective date of said orders and within the time allowed by law, your petitioner, Southwestern Bell Telephone Company, filed before the defendants the following motion for a rehearing in said cause No. 2121:

Motion for Rehearing.

Now comes the Southwestern Bell Telephone Company, defendant in the above entitled cause, and moves the Commission to set aside its decision and orders entered and rendered by it in this cause on the 26th day of November, 1919, and grant it a rehearing of this cause, and for grounds of this motion defendant states:

I.

Said orders and decisions are confiscatory, unreasonable and unjust in that said orders and decision prohibit defendant from operating and maintaining its telephone exchanges and long distance lines within this state without actual loss and prevent defendant from maintaining an adequate reserve for depreciation and from paying a reasonable return upon its investment. Said orders and decision are unconstitutional, void and unenforceable, and are contrary to and in violation of the Constitution of the United States, and particularly the Fourteenth Amendment thereto, prohibiting the taking of property without due process of law and guaranteeing to all persons equal protection of the law, and are contrary
73 to and in violation of the Constitution of the State of Missouri, and particularly Article II, Sections 20 and 21 thereof, providing that no private property shall be taken or damaged for public or private use without just compensation.

II.

Because the Commission found that the value of the property of the defendant used and useful in giving telephone service in this state was not exceeding $20,400,000.00, whereas the uncontradicted evidence in this case shows that said property is worth $31,355,278.00, and the said finding, orders and decision thereby deprives defendant of its property without due process of law and denies to it the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States prohibiting the taking of property without due process of law and guaranteeing to all persons equal protection of the law and contrary to and in violation of Article II, Sections 20 and 21 of the Constitution of the State of Missouri, providing that no private property shall be taken or damaged for public or private use without just compensation.

III.

Because, on the face of said orders and decision, it is shown that the Commission did not arrive at its said valuation of not exceeding $20,400,000.00 for defendant's porperty in this state in a legal or proper manner, but contrary to and in spite of all of the
74 evidence in regard to the value of defendant's said property introduced in this case, and contrary to and in spite of the

fact that the undisputed book cost of defendant's said property in this state is $22,888,943.00, and contrary to and in spite of the undisputed fact that the reproduction cost new less depreciation of defendant's said property in this state is $31,355,378.00; thereby depriving defendant of its property without due process of law and denying to defendant the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and Article II, Sections 20 and 21 of the Constitution of the State of Missouri; and in violation of the Public Service Commission Law of Missouri and especially Sections 93 and 101 thereof.

IV.

Because the Commission in its said orders and decision excludes certain property of the defendant as not used and useful in the service of the public, whereas the evidence showed that said property was purchased by the defendant in the ordinary course of business in the exercise of its best business judgment and its exclusion by the Commission for the purpose of making rates is thereby the taking of the defendant's property without due process of law and denies to the defendant the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and Article II, Sections 20 and 21 of the Constitution of the State of Missouri.

75

V.

Because the Commission in its said orders and decision disregarded the evidence respecting working capital and allowed the sum of $1,033,670.48 only, whereas the undisputed evidence in the case showed that the actual amount used by the defendant for working capital was $1,051,184.00, and the said finding of the Commission thereby deprived the defendant of its property without due process of law and denied to it the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and Article II, Sections 20 and 21 of the Constitution of the State of Missouri.

VI.

Because the Commission in its said orders and decision has excluded from its estimate of the value of defendant's property in this state any amount for the cost of establishing defendant's business and of making defendant's plant a going and operating institution, thereby depriving defendant of its property without due process of law, and denying it the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States prohibiting the taking of property without due process of law, and guaranteeing to all persons equal protection of the law, and are contrary to and in violation of the Constitution of the State of Missouri, and particularly Article II,

Sections 20 and 21 thereof, providing that no private property shall be taken or damaged for public or private use without just compensation.

76 VII.

Because the Commission in its said orders and decision practically fixed 6.81% as the maximum of return which defendant may earn, a return which, in view of the vicissitudes of the telephone business, is insufficient to secure the capital necessary to maintain, develop and extend defendant's telephone system and is not a fair return in view of the value of money and the returns upon capital investments in other lines of industry in the State of Missouri.

VIII.

Because the Commission in its said orders and decision unlawfully and arbitrarily disregarded and disallowed large items of legitimate expense, thereby depriving defendant of its property without due process of law and denying to defendant equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and Article II, Sections 20 and 21 of the Constitution of the State of Missouri.

IX.

Because the Commission found that the schedule of exchange rates put into effect by Albert S. Burleson, Postmaster General of the United States, and now charged and collected by defendant contained rates which are unreasonable and unjust and ordered defendant to concel certain specific rates contained therein and in lieu thereof to charge and collect certain other specified lower rates con-
77 tained in said orders and decision on and after December 1st, 1919, although the Commission found that the return from said rates, even after cutting down the valuation of defendant's property and disallowing large sums of legitimate expense, would be only 7.9% on the value of defendant's property as found by the Commission, a rate which, in itself, is not unreasonably high, thereby depriving defendant of its property without due process of law and denying to it equal protection of the law contrary to and in violation of said Fourteenth Amendment of the Constitution of the United States and said Article II, Sections 20 and 21 of the Constitution of the State of Missouri.

X.

Because the schedules of exchange rates ordered put in effect by the Commission in its said orders and decision, and each and every one of said schedules of exchange rates, collectively and in regard to each and every town named in said orders and decision are unreasonable, unjust, unfair, discriminatory, confiscatory and insufficient to allow defendant to earn a fair return on a fair valuation of its property in this State, and in some instances are insufficient to allow

defendant to earn any return whatever on its said property. Said schedules of rates, and each and every one of them are unconstitutional, void and unenforceable, and deprive defendant of its property without due process of law and deny it the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and contrary
78 to and in violation of Article II, Sections 20 and 21, of the Constitution of the State of Missouri.

XI.

Because said orders and decision abolish the service connection, installation and move charges put into effect by Albert S. Burleson, Postmaster General of the United States, contrary to and in spite of the undisputed evidence that said charges are reasonable, just, fair and non-discriminatory, and that they are a necessary rate classification and that the revenue derived therefrom is necessary to enable the defendant to earn a fair return upon a fair valuation of its property in this State, thereby depriving defendant of its property without due process of law and denying to it the equal protection of the law contrary to and in violation of the said Fourteenth Amendment of the Constitution of the United States and said Article II, Sections 20 and 21 of the Constitution of the State of Missouri.

XII.

Because said orders and decision are unreasonable, unfair and unjust in that the Commission made and rendered them on the 26th day of November, 1919, and made them effective on the 1st day of December, 1919, well knowing that the Public Service Commission Law of Missouri provides in Section 110 thereof that a motion for rehearing can only be filed before the effective date of the order, and well knowing that the next day was the 27th day of November, 1919, which was Thanksgiving Day, a legal holiday,
79 and that said orders and decision would not and could not be served upon this defendant before the 28th day of November, 1919, leaving only one or at most one and one-half working days before the effective date of said orders and decision for the filing of a motion for a rehearing. This was not only unjust and unfair, but also tended to deprive the defendant of its legal remedies.

XIII.

Because said orders and decision are against the law; are against the evidence; are against the law and the evidence; are against the law under the evidence; are against the weight of the evidence; and are contrary to, against and in spite of the undisputed evidence.

Wherefore, the defendant, Southwestern Bell Telephone Company, prays the Commission that it set aside, rescind and hold for naught its said orders and decision and that it grant defendant a rehearing and that upon such rehearing defendant be allowed to introduce

further testimony, file supplementary briefs and present oral arguments before the Commission at such time and upon such dates as may be fixed by the Commission.

Thereafter, to-wit: on the 20th day of November, 1939, and before the effective date of said orders and within the time allowed by law, your petitioner Southwestern Bell Telephone Company, filed before the defendants the following amended motion for a rehearing in said cause No. 2121:

Now comes the Southwestern Bell Telephone Company, defendant in the above entitled cause, and moves the Commission to set aside its decision and orders entered and rendered by it in this cause on the 20th day of November, 1939, and grant a rehearing of this cause, and for grounds of this motion declares and states:

I.

Said orders and decision are confiscatory, unreasonable and unlawful in that said orders and decision prohibit defendant from operating and maintaining its telephone property within this state without actual loss and prevent defendant from maintaining an adequate reserve for depreciation, and from earning a reasonable return upon a fair value of its property used and useful in giving the service which it was give to the people of this State. Said orders and decision are therefore unconstitutional, void and unenforceable, and are contrary to and in violation of the Constitution of the United States, and particularly the Fourteenth Amendment thereto, prohibiting the taking of property without due process of law and guaranteeing to all persons equal protection of the law, and are contrary to and in violation of the Constitution of the State of Missouri and particularly Article II, Sections 20 and 21 thereof providing that no private property shall be taken or damaged for public or private use without just compensation.

II.

Because the Commission found that the value of the property of the defendant used and useful in giving telephone service in the state was not exceeding $20 per station, when on the uncontradicted evidence in this case, alone that said property is worth not less than $31,275,278.00, and the said ruling, orders and decision thereby deprives defendant of its property without due process of law and denies to it the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States prohibiting the taking of property without due process of law and guaranteeing to all persons equal protection of the law and contrary to and in violation of Article II, Sections 20 and 21 of the Constitution of the State of Missouri providing that no private property shall be taken or damaged for public or private use without just compensation.

III.

Because, on the face of said orders and decision, it is shown that the Commission did not arrive at its said valuation of not exceeding $20,400,000 for defendant's property in this state in a legal or proper manner, but contrary to and in spite of all of the evidence in regard to the value of defendant's said property introduced in this case, and contrary to and in spite of the fact that the undisputed book cost of defendant's said property in this state is $22,888,943, and contrary to and in spite of the undisputed fact that the reproduction cost new less depreciation of defendant's said property in this state is $31,355,378; thereby depriving defendant of its property without due process of law and denying to defendant the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and
82 Article II, Sections 20 and 21 of the Constitution of the State of Missouri; and in violation of the Public Service Commission Law of Missouri and especially Sections 93 and 191 thereof.

IV.

Because the Commission in its said orders and decision excludes certain property of the defendant as not used and useful in the service of the public, whereas the evidence showed that said property was purchased by the defendant in the ordinary course of business in the exercise of its best business judgment and its exclusion by the Commission for the purpose of making rates is thereby the taking of the defendant's property without due process of law and denies to the defendant the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and Article II, Sections 20 and 21 of the Constitution of the State of Missouri.

V.

Because the Commission in its said orders and decision disregarded the evidence respecting working capital and allowed the sum of $1,033,673.48 only, whereas the undisputed evidence in the case showed that the actual amount used by the defendant for working capital was $1,051,184, and the said finding of the Commission thereby deprived the defendant of its property without due process of law and denied to it the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Con-
83 stitution of the United States and Article II, Sections 20 and 21 of the Constitution of the State of Missouri.

VI.

Because the Commission in its said orders and decision has excluded from its estimate of the value of defendant's property in this state any amount for the cost of establishing defendant's busines

and of making defendant's plant a going and operating institution, thereby depriving defendant of its property without due process of law and denying it the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States prohibiting the taking of property without due process of law and guaranteeing to all persons the equal protection of the law, and contrary to and in violation of the Constitution of the State of Missouri and particularly Article II, Sections 20 and 21 thereof, providing that no private property shall be taken or damaged for public or private use without just compensation.

VII.

Because the Commission in its said orders and decision practically fixed 6.81% as the maximum of return which defendant may earn, a return which, in view of the vicissitudes of the telephone business, is insufficient to secure the capital necessary to maintain, develop and extend defendant's telephone system and is not a fair return under the evidence and in view of the value of money and the returns upon capital investments in other lines of industry in the State of Missouri; thereby depriving defendant of its property without due process of law and denying to defendant the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and Article II, Sections 20 and 21 of the Constitution of the State of Missouri.

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VIII.

Because the Commission in its said orders and decision unlawfully and arbitrarily disregarded and disallowed large items of legitimate expense, including increases in payrolls and payments for services rendered by the American Telephone and Telegraph Company, thereby depriving defendant of its property without due process of law and denying to defendant the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and Article II, Sections 20 and 21 of the Constitution of the State of Missouri.

IX.

Because the Commission found that the schedule of exchange rates put into effect by Albert S. Burleson, Postmaster General of the United States, and now charged and collected by defendant contained rates which are unreasonable and unjust and ordered defendant to cancel certain specific rates contained therein and in lieu thereof to charge and collect certain other specified lower rates contained in said orders and decision on and after December 1st, 1919, although the Commission found that the return from said rates,

even after cutting down the valuation of defendant's prop-
85 erty and disallowing large sums of legitimate expense, would be only 7.9% on the value of defendant's property as found by the Commission, a rate which, in itself, is not unreasonably high, thereby depriving defendant of its property without due process of law and denying to it the equal protection of the law contrary to and in violation of said Fourteenth Amendment of the Constitution of the United States and said Article II, Sections 20 and 21 of the Constitution of the State of Missouri.

X.

Because the schedules of exchange rates ordered put in effect by the Commission in its said orders and decisions, and each and every one of said schedules of exchange rates, collectively and in regard to each and every exchange named in said orders and decision are unreasonable, unjust, unfair, discriminatory, confiscatory and insufficient to allow defendant to earn a fair return on the fair value of its property in each of said exchanges and in this state used and useful in giving such exchange service, and in some instances are insufficient to allow defendant to earn any return whatever on its said property. Said schedules of rates, and each and every one of them, are, therefore, unconstitutional, void and unenforceable, and deprive defendant of its property without due process of law and deny it the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and contrary to and in violation of Article II, Sections 20 and 21, of the Constitution of the State of Missouri.

86 XI.

Because said orders and decision abolish the service connection, installation and move charges put into effect by Albert S. Burleson, Postmaster General of the United States, contrary to and in spite of the undisputed evidence that said charges are reasonable, just, fair, lawful and nondiscriminatory, and that they are a necessary rate classification and that the revenue derived therefrom is necessary to enable the defendant to earn a fair return upon the fair value of its property in this state, used and useful in giving telephone service to the people of this state, thereby depriving defendant of its property without due process of law and denying to it the equal protection of the law contrary to and in violation of said Fourteenth Amendment of the Constitution of the United States and said Article II, Sections 20 and 21 of the Constitution of the State of Missouri.

XII.

Because said orders and decision are against the law; are against the evidence; are against the law and the evidence; are against the law under the evidence; are against the weight of the evidence; and are contrary to, against and in spite of the undisputed evidence.

Wherefore, the defendant, Southwestern Bell Telephone Company, prays the Commission that it set aside, rescind and hold for naught its said orders and decision and that it grant defendant a rehearing and that upon such *h*earing defendant be al-
87 lowed to introduce further testimony, file supplementary briefs and present oral arguments before the Com-ission at such times and upon such dates as may be fixed by the Commission.

Thereafter, towit: on the 29th day of November, 1919, said motion for a rehearing and said amended motion for a rehearing were overruled by the defendants.

Your petitioner further states that said judgments, findings, conclusions and orders of the defendants are unlawful, unjust, unreasonable, unconstitutional, unfair and void, and that the Public Service Commission of Missouri erred in making its said judgments, findings, conclusions and orders in said cause and in entering said judgments, findings, conclusions and orders and in overruling said motion for a rehearing and said amended motion for a rehearing.

Your petitioner further states that its grounds of error in said proceedings of the defendants and its assignments of error were specifically set forth and called to the attention of the defendants in its said motion for a rehearing and said amended motion for a rehearing, all of which grounds are hereby assigned by your petitioner as its assignments of error and grounds of error.

Wherefore, your petitioner, for the purpose of having the reasonableness and lawfulness of the decisions and orders of said Public Service Commission in the causes aforesaid inquired into and determined by this Court, prays that a writ of certiorari or writ of review be issued as provided by Section 111 of the laws of Missouri for 1913, pages 556 to 651, as amended by laws of 1917, pages 432 to 441, establishing the Public Service Commission, returnable not
88 later than thirty days from the date of the issuance thereof commanding and requiring the defendants as members of said Public Service Commission to certify to this Court under the seal of said Public Service Commission the evidence taken by and the record and proce-dings of said Public Service Commission in the causes aforesaid, and that the same be reviewed by this Court and that this Court make such orders and judgments in the premises as may be just and right.

D. A. FRANK,
J. W. GLEED,
A. H. BOLTE,
THOS. O. STOKES,
Attorneys for Petitioner.

EXHIBIT A.

FLAD, *Commissioner:*

Arguments having been presented by the telephone companies on a motion for rehearing, I desire to reaffirm my concurrence in the order only of the Commission, as entered on November 26th,

and deem it proper therefore to present briefly my views upon the questions involved, as follows:

1. Service connection charges and charges for moves and changes are not unduly discriminatory, and therefore not unlawful, unless such charges are excessive or unreasonable.

A charge based upon the cost of transporting and setting and fastening in position the telephone instruments owned by the company, and attaching the instruments to the customer's wir-
89 ing, where such work is actually done by the company, including the cost of labor and material for whatever wiring is done by the company, at the time, in the building of the customer, would, in my opinion, be eminently fair and equitable. And unless such a charge should in any particular case be deemed to unduly restrict the growth of the exchange, and hence the saturation of the available field, the assessing of such reasonable charges is to be encouraged, for, under proper regulation, they will be reflected in a corresponding reduction in the exchange rates.

2. The ruling of the Supreme Court of this state in State, ex rel. v. Atkinson, 271 Mo. 36, 37, does not declare the service connection charge unjust or unlawful. In that case the Court held that a cash deposit which is "merely a pledge which the subscriber puts up to secure his payments" and for which the subscriber receives no interest was improper. The Court also suggested that the Commission was right in holding "that it was unusual to charge extra for short-time service and that this regulation was unreasonable."

Nor does the Court declare the removal charge improper, except "where there is no such removal of the telephone, but simply where one tenant moves out and another moves in, without additional expense to the company, except the small matter of bookkeeping."

The reasonable inference from the decision of the Court in the case above cited is that if interest had been allowed the requiring of the deposit might not have been considered improper and that if anything more than the "small matter of bookkeeping" cost had been involved in the moving charge, this likewise might not have been condemned.

90 To my mind, the ruling of the Court in the case above cited does not involve the questions at issue in the case now under consideration by the Commission; for in this latter case no cash deposit is required, but presumably merely payment for material and labor expended for the direct benefit of the particular customer; no extra charge is included for short-time users, and no charge is made which represents merely a "bookkeeping cost."

3. The amount of the service connection charge, as well as of the charges for moves and changes, should be fixed in each case so as to bear a proper relation to the costs involved, which vary with the location, size and style of the exchange. These charges should not be based on a uniform standard to be applied to all exchanges alike, as prescribed by the Postmaster General.

New installations and the fullest use of the telephones should be

encouraged, and the uniform charges now in effect should no longer be allowed, but might properly be replaced by such reasonable charges as may appear proper, after investigation, for any particular exchange, with due regard to the desirability of placing no serious impediment upon its growth and development.

91 F.

Judgment rendered by the Circuit Court of Cole County, Missouri, on the 3d day of February, 1920 sustaining the Orders of the Commission (Caption omitted):

92 Now, on this day, this cause coming on to be heard upon the petition of the petitioner, Southwestern Bell Telephone Company, for a review of the orders and decision of the defendants, being the orders and decision issued and rendered by defendant, Public Service Commission of Missouri, and the defendant members thereof on the 26th day of November, 1919, in Cases Nos. 2121, 2133, 2134, 2135, 2136 and 2149, before the said Public Service Commission of Missouri reducing the exchange rates of the petitioner abolishing petitioner's service connection, installation and move charges and fixing a value and fair rate of return on petitioner's property in the State of Missouri; and said petitioner and defendants, appearing by counsel, and said cause, being submitted to the Court upon the record made before the defendants and certified to this Court by them as provided by law and being argued and submitted, the Court doth find the issues in favor of the defendants and doth order and adjudge that said orders and decisions of the defendants are hereby affirmed.

93 G.

Southwestern Bell Telephone Company's motion for a new trial filed in the Circuit Court of Cole County, Missouri, on February 3, 1920 (Caption and signatures omitted):

94 *Motion for New Trial.*

Now on this day comes the petitioner in the above entitled cause by its attorneys and moves the Court to set aside the findings and judgment herein and grant petitioner a new trial, and for the grounds for this motion assigns the following:

95 1. Because the Court erred in affirming and sustaining the orders and decision made by the Public Service Commission under review in this case.

2. Because the Court erred in affirming and sustaining the valuation fixed by the Public Service Commission upon the property of the Southwestern Bell Telephone Company and in holding the valuation so fixed was not unreasonably low and much less than the actual value thereof.

3. Because the judgment and findings of the Court in reference to the valuation of the property of the Southwestern Bell Telephone Company is contrary to the evidence and the weight of the evidence and is not supported by any evidence in the case.

4. Because the judgment and findings of the Court in reference to the valuation of the property of the Southwestern Bell Telephone Company is contrary to the law and particularly contrary to and in violation of the Constitution of the United States and the Fourteenth Amendment thereto prohibiting the taking of property without due process of law and guaranteeing to all persons the equal protection of the law, and contrary to and in violation of the Constitution of the State of Missouri, and particularly Article II, Sections 20 and 21 thereof, providing that no private property shall be taken or damaged for public or private use without just compensation.

5. Because the Court erred in holding that the orders and decisions made by the Public Service Commission under review in this case are not confiscatory, unreasonable, unjust and unlawful and do not prevent petitioner, Southwestern Bell Telephone Company, from earning a reasonable return upon a fair value of its property
96 used and useful in giving the service which it does give to the people in the State of Missouri.

6. Because the Court erred in holding that the orders and decisions of the Public Service Commission under review in this case are not contrary to and in violation of the Constitution of the United States and the Fourteenth Amendment thereto prohibiting the taking of property without due process of law and guaranteeing to all persons the equal protection of the law, and contrary to and in violation of the Constitution of the State of Missouri, and particularly Article II, Sections 20 and 21 thereof, providing that no private property shall be taken or damaged for public or private use without just compensation.

7. Because the Court erred in holding that the orders and decisions made by the Public Service Commission under review in this case are based upon evidence.

8. Because the Court erred in holding that the orders and decisions made by the Public Service Commission under review in this case in relation to valuation of the property of petitioner, Southwestern Bell Telephone Company, a fair return thereon and service connection, installation, change of name and move charges are based upon evidence and are not unlawful, confiscatory, unreasonable, discriminatory and unjust and contrary to the Constitution of the United States and the Fourteenth Amendment thereto prohibiting the taking of property without due process of law and guaranteeing to all persons the equal protection of the law, and contrary to and in violation of the Constitution of the State of Missouri, and particularly Article II, Sections 20 and 21 thereof, providing

that no private property shall be taken or damaged for pub-
97 lic or private use without just compensation.

9. Because the Court erred in affirming the orders and decisions of the Commission as it appears from the record of the Commission that the Commission excepted certain property of the defendant as not used and useful in the service of the public, whereas the evidence showed that said property was purchased by the defendant in the ordinary course of business and the exercise of its best business judgment, and its exclusion by the Commission for the purpose of making rates was thereby the taking of petitioner's property without due process of law and denied to the petitioner the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and in violation of the Constitution of the State of Missouri, and particularly Article II, Sections 20 and 21 thereof.

10. Because the Commission failed to allow a sufficient amount for working capital and the Court erred in affirming that part of its order.

11. Because the Court erred in affirming that part of the Commission's orders and decisions under review in this case which deducted $17,513.52 from petitioner's working capital contrary to the fact that the undisputed evidence in the case showed that said deduction should not have been made, thereby depriving petitioner of its property without due process of law and denying to it the equal protection of the law contrary to and in violation of the fourteenth Amendment of the Constitution of the United States and Article II, Sections 20 and 21 of the Constitution of the State of Missouri.

98 12. Because the Court erred in affirming the orders and decisions of the Commission as it appears from the record of the Commission that the Commission failed to allow any amount of the cost of establishing petitioner's business and of making the petitioner's plant a going and operating institution, thereby depriving petitioner of its property without due process of law and denying to it the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and Article II, Sections 20 and 21 of the Constitution of the State of Missouri.

13. Because the Commission fixed 6.81 per cent as a maximum return which petitioner might earn on the fair value of its property used and useful in giving telephone service in this state, and the Court erred in affirming the orders and decisions of the Commission in that behalf, thereby depriving petitioner of its property without due process of law and denying to it the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and Article II, Sections 20 and 21 of the Constitution of the State of Missouri.

14. Because the findings and judgment of the Court fail to allo petitioner a reasonable return upon its investment and fail to fi a reasonable valuation upon its property contrary to law, and par ticularly contrary to and in violation of the Fourteenth Amendmen of the Constitution of the United States and Article II, Sections 2 and 21 of the Constitution of the State of Missouri.

15. Because the Commission refused to allow anything for valu-
able services rendered the petitioner by the American Tele-
99 phone and Telegraph Company and deducted the sum of $174,048.60 from petitioner's income on this account in spite of the undisputed evidence that said services were and are of great value to petitioner and that their value much exceeded said sum of $174,048.60 which petitioner paid for same, thereby depriving petitioner of its property without due process of law and denying to it the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and Article II, Sections 20 and 21 of the Constitution of the State of Missouri, and the Court erred in affirming the Commission's orders and decisions in that behalf.

16. Because the orders and decisions of the Commission place certain schedules of exchange rates in effect reducing the schedule of exchange rates previously charged by petitioner in spite of the undisputed evidence that said schedules of exchange rates so ordered put in effect by the Commission in said orders, and each and every one of said schedules of exchange rates, collectively and in regard to each and every exchange named in said orders and decisions, are unreasonable, unjust, unfair, discriminatory, confiscatory and insufficient to allow petitioner to earn a fair return on the fair value of its property in each of said exchanges in this state used and useful in giving such exchange service, and in some instances are insufficient to allow petitioner to earn any return whatever on its said property, and the Court erred in affirming the Commission's orders and decisions in that behalf, thereby depriving petitioner of its
property value without due process of law and denying to it
100 the equal protection of the law contrary to and in violation of the Fourteenth Amendment of the Constitution of the United States and Article II, Sections 20 and 21 of the Constitution of the State of Missouri.

17. Because the Commission, in its said orders and decisions, abolished and declared unlawful the rates charged by petitioner and designated in said Commission's orders and decisions as "charges for moves and changes," and the Court erred in affirming the Commission's orders and decisions in that behalf.

18. Because the Commission, in its said orders and decisions, abolished the rates charged by petitioner and designated in said orders and decisions as "service connection charges" on the ground that said charges are discriminatory and unlawful, and the Court erred in sustaining the orders and decisions of the Commission in that behalf.

19. Because the judgment and findings of the Court are against the law; are against the evidence; are against the law and the evidence; are against the law under the evidence; are against the weight of the evidence, and are contrary to, against and in spite of the undisputed evidence.

20. Because the judgment and findings of the Court are unreasonable, unjust, unfair, discriminatory, confiscatory, unlawful, unconstitutional, void and unenforceable and are contrary to and in violation of the Constitution of the United States and particularly the Fourteenth Amendment thereto prohibiting the taking of property without due process of law and guaranteeing to all persons the equal protection of the law, and are contrary to and in violation of the Constitution of the State of Missouri, and particularly
101 Article II, Sections 20 and 21 thereof, providing that no private property shall be taken or damaged for public or private use without just compensation.

102 II.

Action of Circuit Court of Cole County on motion for new trial and application and affidavit of the Southwestern Bell Telephone Company for an appeal to the Supreme Court of Missouri, and allowance of the appeal:

103 And thereafter, to-wit, on the 3rd day of February, 1920, being one of the days of the November, 1919, Term of said Court, the Court by an order duly entered of record, overruled said motion for a new trial, to which action of the Court the petitioner in open court by counsel objected and excepted and at the time saved its exceptions.

And thereafter, to-wit, on the 3rd day of February, 1920, being one of the days of the November Term, 1919, of said Court, petitioner filed its application and affidavit for an appeal herein, which said application and affidavit for an appeal is as follows:

Affidavit for Appeal.

(Caption and Signatures Omitted.)

Thomas O. Stokes, being duly sworn, upon his oath states that he is the attorney and agent for the Southwestern Bell Telephone Company, appellant in the above entitled cause, and that the application for this appeal by said Southwestern Bell Telephone Company is not made for vexation or delay but because this affiant believes that the appellant is aggrieved by the judgment and decision of the Court.

And thereafter, to-wit, on the 3rd day of February, 1920, being one of the days of the November Term, 1919, of said Court, said application and affidavit for an appeal upon being taken up, considered and adjudged to be sufficient, said Court allowed petitioner

an appeal in this cause to the Supreme Court of Missouri by an order of said Court duly entered of record.

And thereafter, to-wit, on the 3rd day of February, 1920, being one of the days of the November Term, 1919, of said Court, said Court allowed petitioner until on or before March 1, 1920, to file its bill of exceptions herein by an order of said Court duly entered of record.

And now within the time allowed and in order that the above matters, things, rulings and exceptions may become and be made part of the record in this cause, petitioner tenders this its bill of exceptions and prays that the same may be examined, allowed, signed sealed, filed and made a part of the record in this cause, which is accordingly done this 12th day of February, 1920, being one of the days of the November Term, 1919, of the Circuit Court of Cole County, Missouri.

J. G. SLATE,
Judge of the Circuit Court of Cole County, State of Missouri.

* * * * * * *

103*a* That thereafter, and on the 24th day of May, 1921, the following further proceedings were had and entered of record in said cause, to-wit:

In the Supreme Court of Missouri, April Term, 1921.

In Banc.

STATE OF MISSOURI at the Relation of SOUTHWESTERN BELL TELEPHONE COMPANY, a Corporation, Appellant,

vs.

PUBLIC SERVICE COMMISSION OF MISSOURI and WILLIAM G. BUSBY, Edwin J. Bean, David E. Blair, Noah W. Simpson, and Edward Flad, Composing the Public Service Commission of Missouri, Respondents.

Appeal from the Circuit Court of Cole County.

Now at this day come again the parties aforesaid, by their respective attorneys, and the Court here being now sufficiently advised of and concerning the premises, doth consider and adjudge that the judgment aforesaid, in form aforesaid, by the said Circuit Court of Cole County rendered, be in all things affirmed, and stand in full force and effect; and that the said respondents recover against the said appellant their costs and charges herein expended and have therefor execution. (Opinion filed.)

104 I.

Southwestern Bell Telephone Company's motion for a rehearing in the Supreme Court of Missouri, filed June 2nd, 1921 (caption omitted):

105 *Appellant's Motion and Argument for Rehearing.*

Now comes the appellant, the Southwestern Bell Telephone Company, and moves the Court for a rehearing and a reconsideration of this cause, for the reason that various questions, hereinafter more specifically set out, and which are decisive of this case, have been overlooked by the Court, and, further, for the reason that the
106 decision of the Court is in conflict with certain provisions of the Constitution of the State of Missouri and of the Constitution of the United States, and of express statutes of the State of Missouri, and in conflict with certain controlling decisions, all as is hereinafter more particularly set out, to wit:

Error as to Net Income.

The following question, decisive of this case, has been entirely overlooked by the Court. At page 31 of appellant's main brief, and on pages 133 to 135, the subject is fully presented.

The Telephone Company presented a statement of its actual income and expenses in the State of Missouri for four months, beginning May 1st and ending August 31st (see Exhibit 20, Abs., p. 895).

This period was presented because the Burleson exchange rates went into effect May 1st, and the figures for May, June, July and August, were all that were available at the date of the hearings in September and October.

The exhibit showed the actual receipts and expenses for the four months.

The Commission, in its opinion, says:

"It appears from the Company's Exhibits 19, 20 and 212 that its net profits on operations available for depreciation and re-
107 turn on the investment, on its exchange property in the state, outside of Kansas City and Independence, for the months of May, June, July and August, 1919, amounted to the sum of $889,023.00, which is equivalent to an annual return of $2,667,069.00; and which would amount to a return of 11.65 per cent per annum for depreciation and return on the book value or original cost of $22,888,943, claimed by the company.

"We are of the opinion, however, that the net profit on operations as shown on said Exhibits 19, 20 and 212 is subject to adjustment."

(As a matter of fact, the foregoing figures apply to toll lines and exchanges; all the property of the company)

The Commission then goes on to make an "adjustment" in the matter of the license contract payment ($174,000), which is hereafter discussed. The opinion then says:

"The annual increase in toll revenue under the Postmaster General's rates was estimated by Mr. Hale at $100,000.00 per annum for the Missouri property. Mr. Barry estimated that under conditions prevailing after the classified toll rates schedule was effective, with 21 per cent of traffic on station to station basis, the increase would be $116,500.00 per year, but that by the end of the year when it is estimated that the station to station basis will be 40 per cent, the increase will be about $63,500.00. As the increase in
108 station to station basis is conjectural, and as under present conditions Mr. Barry's estimate is $116,500.00, it appears that the $100,000.00 figure of Mr. Hale is reasonable. An increase of $100,000.00 per year means $8,333.33⅓ per month, and as the four months taken as a base upon which to estimate the year's results contain only two and one-half months of the toll increase, there should be added one and one-half times $8,333.33⅓, or $12,500.00 to cover the one and one-half months omitted from the four months' period, and this sum, $12,500.00, multiplied by three to annualize it, gives $37,500.00, which should be added to the year's net profit on operations, as shown."

The Commission then discusses the strike expense item and then concludes:

"Adjusting the net profit on operations in line with foregoing suggestions, we have:

Company's figure (4 months $889,023.00) per year	$2,667,069.00
Add account adjustments of 4½ per cent payment..	174,048.60
Adjust toll to show year's results.....	37,500.00
	$2,878,617.60
Deduct year's proportion of strike expense.....	50,000.00
Estimated annual net profits on operations.....	$2,828,617.60

109 "This figure divided by the tentative fair present value of $20,400,000.00 leaves 13.9 per cent per annum available for depreciation, return, surplus and contingencies under the rates of the Postmaster General. After deducting six per cent for depreciation there remains 7.9 per cent available for return, surplus and contingencies."

The Commission found no fault with the statements of revenue and expenses presented by the statistician of the Telephone Company, but did make certain adjustments as shown by the Commission's opinion.

It will be seen that by the process thus adopted the Commission adds $37,500.00 to the yearly income. It is true that the Burleson toll rates were in effect during only a part of the four months' period, and it is also true that if those rates had been in effect during the entire four months, the revenue, calculated on an annual basis, would have been, as they say, increased, substantially, $37,500.00.

On the other hand, the evidence is direct, positive and wholly uncontradicted that increases were made in the basic wages or payrolls in July, aggregating, on an annual basis, $64,000.00, and in August additional increases were made aggregating, on an annual basis, $203,000.00.

The company was struggling to hold its employees, especially its operators. To accomplish this it raised the scale of pay $64,000.00 (annual basis) in July and $203,000.00 (annual basis) in August. This was a permanent increase in annual expense—just as permanent as was the increase in tax rates or revenues.

Because an increase in revenue occurs in June an adjustment is made to show what the revenue would have been for the four months if the increase had been in effect from May 1st.

Two great increases in expenses occurred in July and August, and no such adjustment was made.

In order that the four months' statement might fairly represent what might be expected in the future as to income, the Commission adds $37,500.00 (annual basis) to the income actually received.

In order that the four months' statement might fairly represent what might be expected in the future as to expense, there should have been added to the expense $183,000.00. But this was not done.

Income must be augmented because the increase in toll rates was not in effect during the whole four months. Expense is not to be augmented, although increases in wage scales were in effect only a part of the period!

The Commission, by applying a certain mathematical process, add to the actual four months' income $37,500.00. By applying
111 the same mathematical process, they could add to the expense $183,000.00 (annual basis).

Thus, the $203,000.00 addition (annual basis) to the basic wage schedule appeared in the actual four months' statement one month only, that is, August. When the four months' statement is translated into an annual basis by multiplying by three, it appears in the twelve months' statement only three times, where it should appear twelve times. On account of that item there should be added to the expense $152,000.00.

The $64,000.00 addition to the basic wage schedule appears in the actual four months' statement for two months only, July and August. On account of that item there should be added to the actual expense the sum of $32,000.00.

The total of the two items appears to be $184,000.00, although it was given by our auditor as $183,000.00, and that figure is used in our briefs.

The testimony regarding the increases in wage scales is clear and uncontradicted. Exhibit 11 (Abs., p. 122) shows:

Increase to employes in July	$64,000.00
Increase to employes in August	203,000.00
Increase in taxes (estimated)	61,000.00

112 Mr. Scott testified:

"The facts show that May was not as high in expense as September would be, due to the increases which have been granted since May" (Abs., p. 125).

Again, Scott says:

"Q. You know increases were granted in July and August?
A. Yes, sir. They were actually given to the employes.
Q. And that (Exhibit 11) is your calculation as to what they will amount to in a year?
A. Yes, sir; annual basis" (Abs., p. 128).

Mr. Scott says further (Ab., p. 895):

"This exhibit (No. 20) shows the actual income for May, June, July and August, 1919. These four months are fairly typical as to gross income, but are not fairly typical as to net income, because there were large permanent increases in wages granted in July and August which are not reflected.
Q. You said something about it not being typical—what is your notion about it being typical or otherwise?
A. In July and August there were certain increases granted which naturally will not be included in a four months' statement, which includes May and June, those increases only being effective in
113 July in some cases, and in August in others—if we were to make four months' study of expenses based on actual wages of August you would get a different figure than what you will get for four months, which do not include that."

There was nothing speculative about the July and August increases in scale of pay. Those increases in expenses had been actually incurred and the income and expense statements should have been adjusted accordingly.

But that is not all. Not only were the increases in basic schedules actually inaugurated in July and August wholly ignored, but certain inevitable subsequent automatic increases were wholly ignored. To prevent strikes or to stop strikes, new basic schedules of wages were established—scales of wages which called for automatic and regular increases in propertion to the time of service. The testimony, in essence, was this:

"The girls now employed by the company, if they are still with the company a year or a year and a half from now, will be drawing in the aggregate $250,000.00 more than they are now drawing, and this without any change in the basic scale of wages. If the present scale of wages is not high enough to hold operators, then the basic scale is not high enough and it must be increased. On account of the war the average length of service of operators and plant men is much below normal. Without any change in the basic
114 scale, the men now working, if they are working for the company a year and a half from now, will be drawing something like $150,000.00 more than now."

There is nothing speculative about this testimony. It was all a matter of mathematical calculation. The witnesses knew the scale; they knew the present average term of service; thy knew what was the normal term of service; and Mr. Monroe, for example, superintendent of traffic, was able to say, with very substantial accuracy, what he would be paying in a year and a half if his basic scales were high enough to hold the girls. Normal service requires a normal proportion of experienced operators. Normal maintenance calls for a normal proportion of experienced linemen.

The testimony was that the operating department was undermanned. Mr. Monroe testified that he was short between 200 and 300 operators (Abs., p. 228). Mr. Robinson testified that he did not have his normal force. In order to give the service which he deemed the company ought to have, Mr. Monroe needed 200 or 300 more operators than he had been able to get. If he had had this number of operators during the four months' period, the expense would have been very much greater.

115 All this was overlooked by the Commission. The $183,000,00 adjustment was overlooked.

That it should not have been overlooked, that the adjustment of $183,000,00 in expenses should have been made, that consideration, in handling the expense account, should have been given to the other matters referred to above, is sustained by a subsequent decision of the Commission itself.

This cause was decided upon the experience of May, June, July and August, 1919. In March, 1920, the Telephone Company applied to the Commission for increased rates in St. Louis. The cause was heard in April or May, 1920, and decided in August. The increase asked for was granted. The Commission in its opinion says of the St. Louis exchange alone:

"The Telephone Company now finds itself with an annual income of $262,244.00 less than that to which the Commission deems it entitled" (Commission Leaflets No. 106, page 312).

This as to St. Louis alone. The decision merely shows that the expenses of the four months should have been adjusted as the income was adjusted, and that the other matters above referred to should have had some consideration.

116 The Commission by its process of "adjusting" the four-month revenue and neglecting to "adjust" the four-month expense has arrived at a net which is $183,000,00 too large.

Assuming, for the sake of the argument, that the Commission was right in every respect except this, it remains true that its computation of the net was $183,000,00 too high. The real net was $183,000,00 lower than that found by the Commission.

The Commission, deeming the net $183,000,00 higher than it was, decided that it must be reduced by $91,000.00 in exchange revenue and $118,000,00 in service connection charges. And this they did.

The final result was $183,000,00 per annum less than the Commission intended the company to have.

In a cause involving so many questions of fact and law it is perhaps not surprising that the Court overlooked the foregoing point. It

may not be surprising that the Commission overlooked it. The fact remains that the $183,000 adjustment was not made; there can be no question that it ought to have been made and the Court did overlook it.

This was one point which the Commission's attorneys carefully ignored in their brief.

Valuation.

If appellant's contention as to valuation is sound and correct, this Court necessarily erred in approving the findings of respond-
117 ents that the value of the property was only $20,400,000, and on this point alone the case should be reversed.

A question which this Court has overlooked and which is decisive of the case, and which has been duly submitted by counsel for appellant, is that the present value of the property must be found. This was not done by the respondents, and the failure so to do amounts to a deprivation of appellant's property without due process of law, and denies to it the equal protection of the law, contrary to the Fourteenth Amendment to the Constitution of the United States and Section 30, Article II, of the Constitution of the State of Missouri.

Present Value Must Be Determined.

This Court quotes as authority for its approval of the findings of respondents the very cases upon which appellant relies. In the majority opinion this Court has quoted from the case of Smyth v. Ames, 169 U. S. 547, and states that that case has not been overruled, nor subjected to serious judicial criticism. We agree absolutely with this, but we respectfully submit that the case of Smyth v. Ames is full authority for the position which appellant is taking on this motion for rehearing, and that the respondents did not in their findings even remotely attempt to apply the doctrine of the case of Smyth v. Ames, and this Court has erred in
118 assuming that the respondents did apply the principles laid down therein.

The Case of Smyth v. Ames.

Let us analyze the case of Smyth v. Ames, which is cited as authority for affirming the action of respondents.

The case of Smyth v. Ames holds that the basis of calculation as to the reasonableness of rates must be the fair value of the property being used for the convenience of the public, and that in order to ascertain that fair value certain things must be considered.

These are:

First. The original cost of construction.

Second. The amount expended in permanent improvements.

Third. The amount and market value of its bonds and stock.

Fourth. The present as compared with the original cost of construction.

Fifth. The probable earning capacity of the property under proper rates prescribed by statute.

Sixth. The sum required to meet operating expenses; and,

Seventh. Any other matters that are relevant.

The Court further says that what the company is entitled
119 to ask is a fair return upon the value of that which it employs for the public convenience.

Incidentally, the Court adds that what the public is entitled to demand is that no more be exacted from it for the use of a public highway than the services rendered by it are reasonably worth. This observation of the Court is not material in this inquiry for the reason that the public will never pay more than the service is worth, and as long as the service is being taken and paid for there is a prima facie case at least that the services are worth at least as much as is being collected by the company.

Going back to the elements set out above, it is easy to be seen that the Supreme Court of the United States was not undertaking to lay down any formula or equation by which value could be determined, but, on the contrary, was pointing out the necessity of considering everything that would throw light upon the value of the company's property, and this is fundamental, for the reason that without any citation of authority it must be conceded that what the Constitution protects must be essentially the value of the property, for if by any act or compulsion of public authority the value of a man's property be diminished or destroyed, certainly the property itself is to that extent confiscated and this would be in violation both of the spirit and letter of the Fourteenth Amendment to the Constitution of the United States.

120 We are confirmed in this conclusion by the subsequent statements of the Supreme Court of the United States in the many cases cited in our main brief.

As stated by that court in the case of San Diego Land and Town Co. v. Jasper, 189 U. S. 439:

"It no longer is open to dispute that under the Constitution 'what the company is entitled to demand in order that it may have just compensation is a fair return upon the reasonable value of the property at the time it is being used for the public.' * * * That is decided, and is decided as against the contention that you are to take the actual cost of the plant, annual depreciation, etc., and to allow a fair profit on that footing over and above expenses."

The Commission did not attempt to find the fair present value of appellant's property, although required by law to do so. The Commission did not do what was required by the case of Smyth v. Ames, or any of the subsequent cases in the Supreme Court of the United States.

Conceding, as it must be conceded, that the present value is what the Commission had to determine, the method of determining such value then becomes pertinent. In the Minnesota Rate case, 230 U. S. 434, the Court said:

"The ascertainment of that value is not controlled by artificial rules. It is not a matter of formulæ, but there must be a
121 reasonable judgment having its basis in the proper consideration of all relevant facts."

This clear expression of the Supreme Court of the United States is merely a restatement of the original principles laid down in Smyth v. Ames as to the matters that must be taken into consideration in arriving at the value of a piece of property for the purpose of fixing reasonable rates.

1. The Original Cost of Construction.

The undisputed evidence in this case is that the original cost of construction of the property used in giving service in the State of Missouri was $21,337,760. The amount of working capital found by the Commission was $1,033,670. The amount of intangibles found by the Commission (which is the only item comparable with appellant's contention for an allowance on account of going value) was $1,803,071. Thus, upon a cost basis merely, the total figure was $24,174,501, a figure more than $3,500,000 greater than the valuation finally placed by the Commission on the appellant's property in the state.

2. Amount Expended in Permanent Improvements.

The amount expended in permanent improvements is necessarily included within the original cost of construction and therefore is not treated as a separate item.

122 3. The Amount and Market Value of Its Bonds and Stock.

The amount and market value of the bonds and stock of appellant did not become material in the inquiry. In fact, there have been few cases since the case of Smyth v. Ames in which the question of the amount of bonds and stock outstanding was held to throw any light upon the fair present value of the company's property. We do not say that there might not be cases where the amount of bonds and stock would not shed some light upon the value of the property, but certainly when the books of a company show the original cost, including the amount expended upon permanent improvements, and witnesses can be introduced to show the cost of reproducing the plant at the time of the inquiry, no very great attention would be paid to the amount of bonds and stock which the company had issued. It is evident that if the bonds and stock were floated at large discounts the amount of such discounts could not in any way add to the value of the property, and on the other

hand, if it were possible at any time to sell bonds and stock at a premium, the fact that the amount of bonds and stock outstanding was less than the cost of the property would not be very material in arriving at the fair value. It is for this reason that courts and commissions have not within the past few years concerned
123 themselves very largely with the amount of bonds and stock which any company has issued, especially in an inquiry of this kind, where it is sought to determine the fair value of the existing property.

4. The Present as Compared with Original Cost of Construction.

There can be but one meaning to this language—that is, what it would cost at the present time to build the plant, as compared with what it actually did cost at the time when built.

It is this element, mentioned by the case of Smyth v. Ames, which has been entirely disregarded by respondents in arriving at the valuation of appellant's property.

It would scarcely seem necessary to argue that a piece of property of almost any kind would be worth, that is, the value of it would be not less than what it would cost to get another piece of property just like it. It is because of the fact that in everyday dealings with men we apply consciously or unconsciously the test of reproduction cost to the things that we buy that appellant urges that the reproduction cost of a piece of property cannot be reasonably ignored in ariving at the value of such property as the appellant has in Missouri.

124 The undisputed evidence in this case, not challenged by respondents, is that the reproduction cost of appellant's property in the State of Missouri was as follows:

Value new of physical property	$28,454,488.00
Working capital	1,051,167.00
Going value	5,594,816.00
Total value	$35,100,471.00
Depreciation in property	3,745,193.00
Leaving present value	$31,355,278.00

The Commission ignored, and this Court has ignored, the principle laid down by the Supreme Court of the United States in its latest decision on this subject, that is, the Denver Union Water Company case, 246 U. S. 178, in which the Court said:

"What we have said establishes the propriety of estimating complainant's property on the basis of present market value as to land, and reproduction cost less depreciation as to structures."

We confidently assert that the Commission did not arrive at the so-called tentative value of appellant's property in Missouri as the Supreme Court of the United States has directed, and find (1) what

was the present market value of its land, and (2) what was
125 the reproduction cost, less depreciation, of its structures.

Unless the Commission has done this, an error to the prejudice of appellant has been committed, which ought to be corrected by this Court.

There is no testimony in this record from start to finish that shows what the reproduction cost of this property is, except the testimony put in by appellant upon the trial. Nor has there ever been in any case, the records of which are included in the record on trial here, any evidence whatever put in by the Commission with reference to the reproduction cost of the property which in any way disputes the fairness, accuracy and correctness of the figures presented by appellant, that the present reproduction cost of its total property in the State of Missouri is $35,100,471.00, and that after allowing depreciation, the net result is $31,353,278.00.

When it is pointed out that this record shows affirmatively that the book cost of the physical property, plus working capital, without any allowance for going values, is $22,371,430.00, and that the only testimony before the Commission and in this record with reference to going value is that such item amounts to $5,594,816.00, it can be seen that upon a cost basis alone the mere cost of the appellant's property, plus going value, is approximately $28,000,-
000.00. Compare $28,000,000.00 with the claim of present
126 value of $31,355,278.00, and it must appear to an unbiased mind that on the face of it the contention of appellant could not be very far wrong.

What property in the State of Missouri that has been built up over a period of years, and has been maintained in practically 90 per cent condition, and has cost for the physical property to date $22,371,430.00, and has a business the cost of reproducing which would be $5,594,816.00, would not cost, if reproduced at the present time, and in its present condition, at least $31,355,278? What member of this Court believes that these figures are unreasonable? Divide the figures by one thousand in order to get a comparison with property of various kinds in the state, and let's see if the contention of appellant is at all unreasonable.

Assume that a man buys property anywhere in Missouri for any purpose whatever that is legitimate, and for the giving of service of any kind that fills a constant demand, and assume that over a period of years he has invested $21,337.00. Assume that he has in the bank, or is using in the business an additional amount of $1,033.00. Assume, again, that he has built a business and organization, has spent money upon advertising, and has trained his employes to such an extent that to reproduce the business and organization would
reasonably cost $5,595.00 additional. He would doubtless be
127 carrying his property on his books, under these circumstances, at an amount of $27,966.00. Under such circumstances, approach such a man and ask him what it would cost to build up the same kind of business, to purchase the same property at present prices, and suppose that his answer is that, taking everything into consideration, he considers the present value of his property and

business and working capital $31,355.00. Who would say—what banker, what lawyer, what business man, what judge—would say that his figures sounded unreasonable? How many business and professional men would say that the fair value of his property and business would be $20,400.00? The illustration shows clearly that prima facie the claims of the appellant are not unreasonable.

Evidence as to Value.

Let us examine the testimony before the Commission, and through the printed record likewise before the trial court and the Supreme Court of this state.

The Evidence of Value.

This Court in the majority opinion said:

"The Commission as a basis for its total valuation made an examination of the property of three of appellant's exchanges, at St. Louis Springfield and Caruthersville. To determine these
128 valuations it took into consideration in each instance the original cost of the plant; the appellant's engineer's estimate of the cost of reproduction as of that date; the depreciation; and the working capital for a plant of that capacity. While these items were given primary consideration, the fact that the plants were going concerns was not ignored and the originating item of engineering, supervision, interest during construction, insurance and promotion, and development expenses were also included. In short, it is apparent that the Commission sought to include within its purview all elements of value, tangible and intangible."

We respectfully represent that the above quotation is not borne out by the record. The Commission, in fact, did not, as stated, "as a basis for its total valuation," make an examination of the property of three of appellant's exchanges at St. Louis, Springfield and Caruthersville.

What actually happened, as shown by the record, was that a valuation had been made by the Commission of appellant's property at Caruthersville, as of September 30, 1913; at St. Louis as of December 31, 1913; at Springfield as of September 30, 1916.

An examination of the records in those cases will disclose that the Commission attempted to find in each case what the original cost of the property was and that in each case the finding of the Commis-
sion, instead of approaching the value of the property,
129 approached as nearly as possible to the book cost. In other words, the findings of the Commission in those cases were valueless for any purpose in 1919, and the effort upon the part of the Commission to take its own findings in practically every case based almost entirely upon what the books showed, is unreasonable and certainly does not justify the statement in respondents' brief adopted by this Court that the Commission, as a basis for its total valuation, made an examination of the property of the three largest exchanges of appellant.

Imagine, if you can, a business man in Jefferson City owning three pieces of property located in as many parts of the state agreeing that the present value of his property is what some appraiser said it was worth in 1913 or 1916.

It is no more unreasonable in the one case than in the other to take an appraisal that is several years old and claim that this in any way represents the fair present value of the property.

The evidence showed that detailed valuations were made by appellant's engineers in thirty-six exchanges in the state aggregating more than 96 per cent of the total valuations of all the exchanges in the state and that the balance of exchange property consisted of very small exchanges aggregating less than 4 per cent of the total exchange value and of these remaining exchanges five, aggregating 2
130 per cent of the total exchange value, were appraised from accurate office records and the balance, between 1 per cent and 2 per cent of the total, were estimated on a per station basis.

The Commission's engineers made no effort whatever to check the figures of the company and apparently there was no reason to doubt that the company's figures were accurate.

The testimony showed on this basis that the reproduction value of the property, less depreciation, was $31,355,278.00.

Not only is this not contested by the respondents, but they state in their opinion:

"It shows by such exhibits that the value of the property in the entire state * * * is as follows: Reproduction cost new $35,100,471.00, reproduction cost new less depreciation $31,355,278.00, and cost as per books $22,188,943.00. It also shows the face estimate of reproduction cost new, reproduction cost new less depreciation, and the prorated book cost, at each of the forty-six local exchanges mentioned" (Abs., p. 2444).

This was the only evidence before the Commission of what the reproduction cost of appellant's property would be in 1919. This testimony is ignored entirely and no attention whatever is paid to it by the Commission other than to reduce it by an arbitrary percentage.

131 This Court states with respect to the valuation by the Commission:

"The Commission having before it the valuations of the three properties ascertained in the manner stated employed the result obtained in testing the correctness of appellant's estimate of the cost of reproduction in respect of its other exchanges; and for the purpose of reaching a total valuation adapted to existing conditions reduced the appellant's estimate of the value of its entire property in the same ratio as its estimate of its properties at St. Louis, Springfield and Caruthersville had been reduced in determining the value of these plants for rate-making purposes."

This statement by the Court is a correct statement of what actually happened and is distinctly a method disapproved by the Supreme

Court of the United States because of the fact that the result arrived at is merely the application of a formula and the Supreme Court of the United States in no uncertain language has said that the ascertainment of value is not a matter of formula, but there must be a reasonable judgment having its basis in a proper consideration of all relevant facts.

Not only that, but the same Court has said in the Minnesota Rate Case, before cited, that

"the property is held in private ownership and it is that property and not the original cost of it of which the owner may not be deprived without due process of law."

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The Supreme Court of the United States has gone further and, as before referred to, has said that the proper way to estimate the value of complainant's property is on the basis of present market values as to land and reproduction cost less depreciation as to structures.

The Supreme Court of the United States has not said that a Commission shall take a valuation from three to six years old to test the correctness of appellant's estimate of the cost of reproduction in respect of its property.

With all due deference to Dr. John H. Gray, we submit that the Supreme Court of the United States has never announced any such doctrine as that quoted by the Court in the main opinion. We will have reached an advanced age when an investor in a public utility, by the mere fact of his investment in such utilities, gives to the public a part of the value of the property which his money has bought.

If the doctrine contended for is sound, then the utilities of this state and any other state that adopt such a doctrine will be unable to go to the investing public and invite them to put their money into such utilities. Honest men in charge of such properties can-

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not use their influence to obtain new capital for the development of the resources of a state which announces as a cardinal doctrine of valuation the proposition that each hundred dollars invested in the service of the public, because of such investment, is worth less than $100 and must be valued upon a different basis from property otherwise employed.

Dr. Gray states:

"The doctrine of a fair return in public utilities forever separates such property economically from ordinary private property."

The Supreme Court of the United States answers Dr. Gray, Minnesota Rate Case, 430 U. S. 468:

"The property is held in private ownership, and it is that property and not the original cost of it of which the owner may not be deprived without due process of law."

We agree with the statement made by this Court that:

"Many state commissions have adopted reproduction cost new less depreciation plus the value of the plant as a going concern as a basis in reaching a valuation for rate-making purposes."

We point out, also, to the Court, that the statement in its opinion that

"Such a valuation as it is insisted upon by appellant, based
134 upon war-time or abnormal prices has been considered as grossly unjust and has not been followed,"

is neither entirely accurate nor has it any relation to the issues here involved.

As before referred to by us, the latest expression of the Supreme Court of the United States establishes the propriety of estimating complainant's property on the basis of present market values as to land and reproduction cost less depreciation as to structures (Denver Union Water Company Case, 246 U. S. 178).

The statement, however, has no bearing on the issues in this case, for the reason that appellant has not gone before the Commission asking for valuation based upon abnormal values created by war-time prices, and, therefore, should not be considered as asking for anything unjust.

Mr. J. J. Robinson, the engineer for the Telephone Company, was the only witness who testified before the Commission upon the subject of valuation of the company's entire plant in the State of Missouri. He did not place the valuation upon abnormal prices or war-time prices, but gave his estimate under oath of what it would cost at that time, on a very conservative basis, to reproduce appellant's plant in the entire state. Applying his best judgment and speaking from
a great experience in constructing telephone property, he esti-
135 mated that the entire plant would cost, to reproduce in the most economical manner possible, the sum of $35,100,471.00 new, and that there was in the property deterioration to the extent of $3,745,193.00, cutting the present value to $31,355,278.00. That testimony stands in the record uncontradicted, and Mr. Robinson is nowhere impeached.

Mr. Robinson's testimony shows that in arriving at his figures he has made an estimate so low that he does not believe that he would have been able at that time to get any responsible person to contract to reproduce any of the exchanges of the appellant for the amount of money that he had named in his appraisal. His estimate was that it would cost to construct a telephone exchange not less than 50 per cent more than such cost was in 1914 or 1915, and yet the prices which he used were only 25 per cent higher than the prices used in those years.

In other similar cases testimony has been given that the war-time prices were from 70 per cent to 90 per cent higher than in 1913 and 1914. It must be a matter of common knowledge—so common that the Court can take judicial notice of it—that the value of the dollar during war time was approximately 50 cents as compared with the value of it in 1913 and 1914, and the value of the dollar is not much more even at the present time.

If this be true, how could it be possible that a plant valued
136 in 1913 would have a reproductive cost in 1919 of only the same amount as found in the former year? It could not have such value, and there is no testimony in the record to the effect

that it has. In fact, the record shows affirmatively that the property has a greater value.

The record shows affirmatively also that using unit costs only 25 per cent higher than they were in 1913 and 1914, the result obtained by Mr. Robinson is extremely conservative and cannot be justly said to be based upon war-time or abnormal prices.

It must be accepted that prices of products of labor and the wages of labor will not be reduced again to the standards prevailing before the war.

In this connection we desire to call the Court's attention to its misunderstanding of the term used by the Commission, adjusted or so-called "prorated book cost." The Court said that the Commission had referred to the book adjustment by the appellant of estimated over and under values and to the fact that in the process of the acquisition of property in the various towns and cities of the state the appellant, in order to eliminate competition, sometimes paid a price much in excess of value and sometimes because of discouraging conditions affecting operation by a competitor purchased a plant far below actual value.

137 What the Commission stated was merely a hypothetical case to the effect that if the company, in order to eliminate competition, paid a price in excess of the value or because of discouraged local operation were able to purchase a plant far below its actual value, the "prorated book cost" basis would not reflect anything like the original cost.

As a matter of fact, there was no evidence before the Commission to justify any such statement, and this Court will take judicial notice of the fact that telephone companies, such as appellant in this case, are operating and have been for years operating under the system of accounting prescribed by the Interstate Commerce Commission which compels the Company to put in property purchased upon its books at the actual structural value, and does not permit the capitalization of any overcharge that may have been paid because of competitive conditions.

As we understand the use of the words "prorated book cost" in Exhibit 212, it merely refers to the fact that the books of the company for the state are not kept by exchanges and that in order to determine the amount of cost for each exchange, a prorate had to be made. There was no connection whatever between such a prorate and any allowance for overcharge or undercharge as assumed in the hypothetical case in the Commission's opinion and stated as a fact in the Court's opinion.

138 Going Value.

As an additional reason for a reconsideration of this cause and a reversal of the same, appellant points out that the Court has overlooked the record in this case with reference to going value, duly submitted by counsel, and has approved the finding by the Commission not based upon the entire facts introduced in the record, but merely an arbitrary percentage arrived at by the Commission with-

out any rule or reason, and this question is decisive of the case now before the Court.

That there is such an element in operating concerns is now agreed by all courts, commissions, engineers and experts.

The Supreme Court has said:

"There is an element of value in an assembled and established plant doing business and earning money over one not thus advanced is self-evident. This element of value is a property right and should be considered in determining the value of the property upon which the owner has a right to make a fair return when the same is privately owned, although dedicated to the public use" (Des Moines Gas Co. v. City of Des Moines, 238 U. S. 165).

In the later case of Denver v. Denver Union Water Co., 246
139 U. S. 178, the same court repeats what was said by it with respect to going value in the Des Moines Gas case.

The evidence was without dispute in this record that the cost of reproducing the organization and the business of appellant in the State of Missouri would be not less than 20 per cent of the cost new of the structural property, or a total of $5,594,816.00, which would be the minimum of the going value of the company for the state.

This Court has apparently overlooked the fact that there was testimony in the record to the effect that the going value of the company in the state was, as before stated, $5,594,816.00, which amount was entirely ignored by the Commission and in lieu thereof an arbitrary 10 per cent of an emasculated figure representing a part of the cost of the property was added covering all intangibles.

It has been previously submitted by counsel and is now called to the Court's attention with the respectful suggestion that a proper consideration of this item alone is sufficient to reverse this cause.

Original Cost not Proper Basis for Rate Making.

What is said in another part of this argument with reference to valuation is applicable under this heading. The mere fact
140 that the book cost of appellant's property, as adjusted downward by the Commission, is $22,371,430.00, which figures include nothing for going value, and the fact that going value, according to the testimony, was $5,594,816.00, and according to the arbitrary figure adopted by the Commission, $1,803,071.00, shows that merely upon the basis of cost alone the finding of the Commission should have been somewhere between $24,174,501.00 and $27,966,246.00, according to the amount assigned for going value, and yet in the face of that, the Commission's final figure for fair present value of appellant's property, including every item of value of appellant's plant and attached business in the State of Missouri, is only $20,400,000.00.

Even had the Commission fixed the value at $24,174,501.00, the minimum of cost of the property and attached business and organization, such a finding would have been in the face of the decisions of the highest court of this land frequently announced that not cost but the value of the property must be determined.

In Smyth v. Ames the contention of the railroad companies that the cost of the property must be taken as the value was overruled by the Supreme Court of the United States and the doctrine there first fairly and fully stated that the value and not the cost of the property must be determined.

141 In the case of Shepard v. Great Northern R. R. Co., 184 Fed. 765, it was said that the Master rightfully decided:

"That the cost of reproducing this property new was a more rational and reliable measure of its real value than the original cost of its acquisition and construction or the market value of the stocks and bonds of the company."

In the case of Des Moines Water Co. v. City of Des Moines, 192 Fed. 197, the Court said:

"What a plant cost originally is not the measure of value the courts must look to to determine the validity or invalidity of rates. The value of stocks and bonds is no test for obvious reasons and mere theorists only at the present day insist upon such as the valuation. * * * This case seems to have been tried before the Master by both parties upon the reproduction theory, that is to say, what this plant would cost if it were allotted out of existence and the city or some other company were to undertake to reproduce the plant."

Deciding that the company is entitled to demand a fair return upon the reasonable value of the property at the time it is being used for the public, the Supreme Court of the United States, in the case of San Diego Land & Town Co. v. Jasper, 189 U. S. 439, said:

142 "That is decided and is decided as against the contention that you are to take the actual cost of the plant, namely, depreciation, etc., and to allow a fair profit on that footing, over and above expenses."

The Court must be struck upon a reconsideration of this matter, with the thought that what the Commission evidently had in mind in the decision of this case was that appellant is entitled to earn a return merely upon the cost of the actual physical plant of the company in the state, with certain deductions therefrom. The Court cannot, it seems to us, be convinced that a finding by the Commission, in the face of and contrary to the sworn testimony before the Commission, is fair, especially when such finding is from four to seven million dollars less than the actual cost of the property, especially in view of the well-known conditions existing for the last four or five years on account of which the value of all properties and commodities in the entire country has greatly increased.

Justice Swayze, in the case of Elizabethtown Gas & Light Co. v. Board of Public Utilities Commission, in the New Jersey Supreme Court, decided August 7, 1920, said:

"I think it entirely clear that the failure to allow for prices at the time to which the rates apply, July 1, 1919, was an error. It is not

denied that prices were very much higher in 1919 and are
143 very much higher now than the average for the years 1911 and 1916. So notorious is this that the Supreme Court of the United States has referred to it in an opinion as a matter of common knowledge (Lincoln Gas Company v. Lincoln, 250 U. S. 256, at page 268)."

Fair Return.

Appellant respectfully suggests that the matters duly submitted by counsel to the Court, with reference to a fair rate of return, have been by the Court overlooked, and that this error alone is decisive of the case if sustained.

The fixing of 6.81 per cent as a fair rate of return has no basis in any evidence submitted to the Commission. We do not know what the Court means by the statement that "allowance being made for the interest on appellant's bonded indebtedness, the gross returns upon its property at the Commission's valuation is 12.81 per cent." We know of no allowance being made for any interest on a bonded indebtedness. The rate of return calculated by the Commission was based upon the valuation of $20,400,000.00, which is only about two-thirds of what the evidence showed the property is worth. The 6 per cent for depreciation was based on testimony showing that 6 per cent of the reproduction cost of the property, and not 6 per cent of
141 a part of the cost, would be a fair amount to allow for depreciation. As shown by the tabulation on page 4 of appellant's original brief, this one difference amounts to $483,269.00 per year, that is, the depreciation calculated by the Commission is that amount less than the testimony shows is necessary in order to keep the property properly maintained and replaced when necessary over a period of years.

Even upon the basis adopted by the Commission the per cent allowed for net return is only 6.81 per cent of a part of the cost of the property. If this per cent were being calculated upon the fair value of the property it would still be too small to attract any new capital into the business, and this after all is the only test of the reasonableness of any rate of return. The sole testimony in this case is that of Mr. Frank P. Hays, who testified that in the telephone business in the State of Missouri a return of not less than 10 per cent would be required to attract capital at this time. In the face of that testimony and without any other testimony to the effect that 6 per cent or 7 per cent is a fair rate of return, the Commission has arbitrarily determined a rate which is insufficient to attract a single thousand dollars of new money into the telephone business in the State of Missouri at the present time.

The Court cannot ignore the fact that municipal bonds, ex-
145 empted from all forms of taxation, state and national, are producing more than 6.81 per cent upon the net proceeds of such bonds. The public press contains advertisements from day to day of industrial bonds of well-established businesses offered at a price to produce from 8½ per cent to 10 per cent, and this is the return to the

investor and not the per cent which the company floating the bonds is to pay upon the amount actually received.

To hold that 6.81 per cent is a sufficient return to attract capital into the telephone business in the State of Missouri at this time is to hold something that is contrary to the experience of sensible men, and not in accord with the facts as we all know them.

To all intents and purposes money is a commodity which an institution like the Telephone Company must purchase in the open market. The Telephone Company has not a large bank account somewhere from which it can draw money as needed for development purposes, but must from time to time go into the markets of the world and obtain new money for the purpose of giving service to the people of the state.

There are but two ways open to the Telephone Company to obtain this money. One is by the sale of stock and the other by the sale of bonds. It must be evident no company such as this could long finance itself merely by the flotation of notes or bonds. A
146 time comes when stock must be sold. In order to sell that stock the investor must be approached, and he must be approached with a showing from the Telephone Company, (1) that his money will be safe; (2) that when his dollars are invested in telephone property the state will not say that he has thereby given a portion of it as a donation to the public, but that the Constitution of the United States still protects the value of his property from confiscation, just as it did his money when it was still in his hands. Not only must his investment be safe, as far as his principal is concerned, but there must be held out to him the possibility—nay, the probability—that his money will earn as much or more in the telephone business as it will earn in any other established line of business in which he is able to invest. If he is offered first mortgage notes in the town in which he lives upon security which he considers good at a rate to produce him not less than 8 per cent above all the expense of examination of abstracts, payment of insurance and taxes, he will hardly listen to the telephone stock salesman who trys to sell him telephone stock which produces only 8 per cent or 9 per cent. But suppose, instead of approaching the investor with a proposition of paying him 8 or 9 per cent, or even 10 per cent, as Mr. Hays swears is necessary, we have the telephone stock salesman approach the investor with a statement that the Supreme Court of the
147 State of Missouri has affirmed a decision of the Public Service Commission of this state, holding that 6.81 per cent is a sufficient amount for a man to receive upon his investment in telephone plant in the State of Missouri. Suppose we tell him at the same time that this percentage is calculated, not upon the fair value of the company's property, but upon two-thirds of its fair value, and upon an amount that represents not more than 80 per cent of the actual cost of the property, including its working capital and attached business. How much money can it be supposed this company could get for the needed additions in the State of Missouri?

It was stated in the oral argument in this case before the court that the immediate requirements of appellant for telephone purposes

in this state during the next five years would be not less than $25,000,000.00, or an amount equal to that already invested in the state, and approximately three-fourths of what the company claims its property is worth.

The demand for telephone service in the State of Missouri is constant and strong. Hundreds of people are being denied service in various parts of the state, and multiplied thousands throughout this territory and in the entire United States because of the fact that telephone companies, under even the most favorable circumstances, are not able to obtain the needed funds for development. It must be borne in mind that a telephone plant is never completed.

148 Inside the Telephone Exchange Building the switchboard is built up section by section, starting with a few hundred and having an ultimate capacity in each exchange of from seven to ten thousand lines. The addition of each subscriber causes the employment of a proportionate part of a new section of that switchboard, and as these sections are filled up, new sections must be added, new cables must be provided, new poles must be set, new wires must be strung, and new telephones installed. The addition of each new telephone means an investment of from $100.00 to $300.00 additional merely for that telephone. The addition of thousands per year in a given territory means the addition to capital of hundreds of thousands of dollars, and in the territory in which this company operates, in five states of the Southwest, without being able to give all of the service demanded, the amount of this investment is increasing at the rate of more than fifteen million dollars per annum.

For the entire United States this increase in investment amounts to practically one hundred and fifty million dollars per annum, or at the rate of about three million dollars per week.

Through the relation which this company has with the American Telephone and Telegraph Company, under which it pays 4½ per cent of its gross receipts, it has been able to obtain in the past

149 just as needed funds to build the plant which was valued by the Missouri Public Service Commission without paying any amounts out for brokerage, bonuses, premiums or extra charges, and to obtain such funds as and when needed.

It is evident that if the State of Missouri is to get the development in the telephone industry that its business requires, and that will be obtained by other states, during the next five or ten years, a sufficient return will have to be allowed to attract capital to this state.

The statement by the Court that the American Telephone and Telegraph Company has paid 8 per cent dividends upon its stock is unrelated to the question of what is a fair return for the appellant in this case. It is immaterial for the reason that no one would concede that if the American Telephone and Telegraph Company were not able to pay an 8-per cent dividend that the rates in Missouri ought to be raised in order that it could do so. Conversely, there would be no reason for having a rate of return in Missouri unfairly low merely because the largest stockholder of the appellant happened

to be earning from other properties a sufficient amount to pay 8 per cent dividend.

Can it be said that it is possible to finance new telephone construction in Missouri on a basis of a return of 6.81 per cent
150 upon less than the actual cost of the physical plant of appellant? Can it be done, in the face of the showing by the Federal Census that even in 1910 the average rate of return on capital invested in Kansas City was 12.3 per cent; in St. Louis was 11.6 per cent; in St. Joseph was 13.2 per cent, and in Jefferson City was 18.5 per cent, with the national banks even ten years ago earning more than 10 per cent upon the full amount of their capital stock and surplus, and manufacturing concerns in the State of Missouri earning more than 11 per cent? How can it be said that 6.81 per cent would be a fair return for a telephone company?

We believe firmly that what is a fair rate of return depends upon the facts of any particular case. It is for that very reason that we say that the rate allowed in the Wilcox case is not a precedent in this case. It is true that only a little above 7 per cent was approved in the case of Lincoln Gas & Electric Light Company v. City of Lincoln, 250 U. S. 67, but it must be borne in mind that the Supreme Court of the United States in that very case said:

"We cannot approve the finding that no rate yielding as much as 6 per cent upon the invested capital could be regarded as confiscatory, in view of the undisputed evidence, accepted by the Master, that 8 per cent was the lowest rate sought and generally obtained as a return upon capital invested in banking, merchandising and other business in the vicinity."

151 And the Court said further:

"It is a matter of common knowledge that, owing principally to the world war, the costs of labor and supplies of every kind have greatly advanced since the ordinance was adopted, and largely since this cause was last heard in the court below. And it is equally well known that annual returns upon capital and enterprise the world over have materially increased, so that what would have been a proper rate of return for capital invested in gas plants and similar public utilities a few years ago, furnishes no safe criterion for the present or for the future."

Nor is it any answer to appellant's position that Congress has directed the Interstate Commerce Commission to allow the railroads a return of 5½ per cent upon their valuation for a term of two years from March 1st, 1920. No new money is going into them. They are universally in financial straits. Receiverships are common. Rolling stock and roadbeds are in poor condition. No new lines are being built, and development is at a standstill. The 5½ per cent allowed was not on the basis of what is a fair return to such railroads, but is a mere expression of the legislative body that anything less than that amount would be unfair to the men who have placed their

money in such utilities. It is not to be taken as an index
152 or barometer of what is considered by business men a fair rate of return for investment in utility properties such as that of appellant. In fact, Congress could not pass a bill which would determine, or be even persuasive to investors in this or any other country as to what is a fair rate of return.

The State of Tennessee undertook at one time to refund certain of its bonds at a rate of interest lower than the market at that time demanded, and a provision was put into the statute that the bonds should be sold at not less than par. The law was valid, but the bonds did not sell.

We ask no fairer treatment than that promised in the statement by the Missouri Public Service Commission in the case of Engineers Club v. Union Electric Light and Power Co., 8 Mo. P. S. C. 119, where the Commission said:

"The investor is entitled to a reasonable return on the value of the property devoted to the service of the public, and the interest of the general public demands that said return shall be sufficient to attract new capital required for extensions and betterments under normal conditions."

153 Postmaster General's Rates.

It is respectfully submitted that the Court erred in holding that rates put in effect by the Postmaster General were not lawful rates at the time of the hearing before the Commission.

The Court is of the opinion that the rates fixed by the Postmaster General became inoperative and that rates theretofore established by the Public Service Commission went into effect; that the Commission's rates were not abolished by Congressional action but were merely held in abeyance during the Congressional Act or until the repeal of the same.

With all due deference to the Court, we earnestly submit that this is not a fair construction of the situation arising from the seizure of appellant's lines by the National Government.

The statement by the Court in another part of the opinion is to the effect that:

"The Commission permitted the toll rates established by the Postmaster General to stand, discontinued the installation charges and lowered the rates for local service furnished to both residences and business houses in some of the appellant's exchanges. The changes downward as disclosed by the record were small."

If the position taken by this Court that the rates theretofore
154 established by the Public Service Commission were not abolished but were merely held in abeyance, then the act of the Commission in passing upon the rates in this case could not have been a mere discontinuance or lowering of rates but would have been an increase of pre-war rates.

The inconsistency in the opinion, it is respectfully urged, significantly points to the soundness of our contention that when the

Postmaster General's rates went into effect, all previous rates were thereby annulled and the Postmaster General's rates, being established by law, irrespective of the reasons of the law, became the legal rates and remain such until changed by lawful authority. Otherwise, to hold would mean that if the Commission had not acted at the end of the four months' period after the return of the lines by the Government, there would have been no rates in effect and the company would have had to give service free of charge or be relegated to its common-law right to fix the charges itself for the services rendered.

A more reasonable construction would be that rates once fixed by lawful authority are presumed to be lawful until changed in accordance with law.

The law under which the Commission acts requires that a hearing be held and that findings be based upon evidence.

155 The materiality of this contention becomes apparent immediately for the reason that if the rates were lawful it was incumbent upon the Commission to show something by evidence that would make the rates unjust, unreasonable, unjustly discriminatory or unduly preferential.

There is no evidence submitted before the Commission that tended even remotely to indicate that the rates in existence were unjust, unreasonable, discriminatory or preferential.

This brings us to the discussion of the next question—that of the power of the company to make rates under the Missouri statute.

This question, it seems to us, is fundamental.

Power to Fix Rates.

The Court states in its opinion that it is contended with seeming seriousness that the Public Service Commission is not authorized to fix rates inasmuch as this power is vested in appellant.

The appellant does contend seriously and earnestly that the primary power to make rate inheres in the Telephone Company and not in the Commission. The power to make rates is an inherent power of ownership and needs no grant or license under the police power. It is a right necessarily incident to the furnishing of any service. If this were not true, the Telephone Company could not have made charges for its service prior to the organization of the Com-

156 mission, but we respectfully submit that, without any law whatever upon the subject and without the existence of a Commission, a telephone company with a grant to occupy the streets and highways of the state would have authority at common law to make a reasonable charge for its services.

The right reserved to the state under the police power is not that of making rates, but of regulating rates. It is not that of promulgating charges, but that of investigating and determining whether or not such charges are reasonable, and when such charges are conceded to be reasonable, no power lies in the Commission to change such rates.

The Commission is a regulatory body, and, as such, has regulatory powers. Its relation towards the utility is somewhat that of the peace officer towards the citizen. The power of the policeman with respect to the citizen only arises when the citizen violates some law or does something which is contrary to statute. As long as the citizen obeys the law and his conduct in no way jeopardizes the health, morals, or safety of society, the policeman has no authority to interfere with his liberty. In like manner the criminal judge is without authority to restrain the liberty of the citizen who is peacefully attending to his own business and not breaking some law, or threatening to do so.

It is only when the citizen does something which is un-
157 lawful that the police power becomes active and restrains him or changes the course of his conduct.

Likewise with the utility. The right to charge for the service rendered to the public is a common right, inherent in the fact of ownership of property, and until the rates charged by the utility become unreasonable, there is no occasion for the exercise of any jurisdiction by the Commission, and, therefore, no power for the exercise of such jurisdiction.

It is not a question of conforming to the procedure prescribed by the act creating the Commission. It is a question of what is necessary in order to give the Commission power in the first instance to make a rate.

The statute under which appellant is organized provides that a corporation organized under said statute shall have power to construct and operate lines between such points as it may from time to time determine, and to make such reasonable charges for the use of the same as it may establish.

This statute itself was merely declaratory of the common-law power resting in such a company to charge reasonable rates for service.

The Legislature did not, by the passage of the act creating the Commission, and could not, under the Constitution, take away from the company the right vested in appellant to make reasonable charges for the use of its lines.

158 A simple test will determine whether or not our position is sound. Suppose some legislature should abolish the Commission entirely. Would it be said then that the telephone company could no longer give service because no rates would be in effect, or that it would have to give service free of charge? We think not, for the reason that the same power to fix rates in such a case would exist as at present; that is to say, the company would have the right to fix the rates originally as it does at present, the only difference being that there would be no administrative body to check over such rates and determine the reasonableness of the same.

The practical effect of the position which we take in respect to the matter of jurisdiction is that respondents, having clearly excluded from their consideration certain elements of value which would be decisive of this cause, this Court ought to hold that such findings should be set aside and the case should be sent back to the Commission for proper proceeding upon sound principles of valuation.

If the Postmaster General's rates were lawful rates, as undoubtedly they were under the decision of the Supreme Court of the United States, then we fail to see by what authority it could be held that the Commission rates, prior to the seizures of the lines by the
159 National Government, could be restored in the absence of a hearing and determination that such rates were reasonable. The fact that a hearing was given and evidence introduced does not in any way change the authority of the company to make rates and that of the Commission to regulate such rates.

The Commission's power to fix reasonable rates, under the plain provision of the law, only arises upon its finding, after notice and hearing, that the telephone company's rates are for some reason unlawful.

Reasonableness of Rates.

We respectfully represent that the Court has overlooked questions of evidence and of law with reference to the reasonableness of rates which would be decisive of this case.

The question of what is a reasonable rate has been considered by a great many courts. A just and reasonable rate can never exceed the value of the service to the consumer, nor can it be made by compulsion of public authority so low as to amount to confiscation. Justice to the consumer requires that a rate be somewhat less than the full value of the service to him and justice to the company requires that a rate should be above the point at which it would become confiscatory. In other words, a rate must be sufficient to induce investment and continuance of capital, for which reason
160 there must be some hope of gain commensurate with that realizable in other businesses. The mere assurance that the investment will not be confi-cated will not be sufficient. An ordinarily reasonable rate is one which yields a fair return upon the value of the property used in giving service and is sufficiently high to attract new money to the business.

Public Service Gas Company v. Utility Commissioners, 87 Atl., 651.

The fundamental proposition that certain legal rates were in effect and that by the order of the Commission these rates have been reduced, cannot be evaded. The authority of the Commission to reduce the rates depended, under the Missouri statute, upon a finding based upon the evidence submitted before the Commission that the rates in effect were unlawful. The only ground stated anywhere in the Commission's opinion upon which to base the decision that the rates ought to be reduced was that under the findings of the Commission the return to the company would amount to 7.9 per cent per annum upon the adjusted cost of its property.

We submit that such a basis of a finding is unlawful, is not warranted by any sound decision, and that such finding amounts to a confiscation of appellant's property and is therefore null and void.

With the evidence before the Commission that 10 per cent
161 would be a fair rate of return the Commission was not justified in finding that 6.81 per cent would be a fair return, and certainly would not be justified in finding that 7.9 per cent would be so high as to be unjust and unreasonable.

As stated in the case of Public Utilities Commission v. Springfield Gas & Electric C., 129 N. E. 891:

"Generally speaking, a rate which is non-confiscatory would not be so unjust and unreasonable as would authorize the setting aside the decision of the Commission fixing such a rate. * * * And yet there is a difference between a rate which is merely non-confiscatory and one which is just and reasonable, and it is the just and reasonable rate which the Commission is called upon to fix."

The Missouri statute requires the Commission to consider a reasonable average return, a reserve for surplus and contingencies, and a reserve for replacement of plant. It would be necessary to provide a rate which is sufficient to attract an average return, in addition to the surplus that is necessary to maintain its permanence. This means that the return and surplus must be sufficiently high to enable the company to obtain new money for improvements and extensions.

It is true that the question as to what per cent of the value of the property in use should be allowed as a return is dependent
162 upon the facts and circumstances of the particular case, but it is also true that the evidence in this case shows that 10 per cent is the minimum return required to attract capital at this time into the telephone business in the State of Missouri.

The burden of proof as to the reasonableness of the rates was amply met by appellant. In fact, a review of the record will show that the appellant went farther on many subjects than the Commission desired it to go. The assumption by the Court that there was any further knowledge desired by the Commission which was not produced by appellant certainly is not justified by the record in this case. What we have said is especially applicable to the observation by the Court with reference to the division of toll charges between the American Telephone and Telegraph Company and appellant, a matter discussed in another part of this argument.

We respectfully represent that the Court has not in our opinion correctly defined what is a reasonable rate, and invite the Court's attention to the authorities cited by us in our main brief as showing, first, what a reasonable rate is, and, next, what is necessary to show that a rate is unlawful. We do not believe that anything in this record shows, or tends to show, that the rates which have been reduced by the Commission were unlawful, or that the Com-
163 mission had authority to cut those rates as has been done.

In the absence of a finding that the rates are unlawful, the rates which were in effect should have been continued in effect and should not have been reduced.

Service Connection Charges.

We believe the Court has overlooked the effect of the findings by it in respect to the service connection charges and the probable future consequences in rate-making in this state of leaving the decision in the condition in which it is at the present time.

As we interpret the decision of this Court, the service connection charge is approved by Justices Graves, Higbee and Woodson on the ground that not to make such charge would be discrimination, and that Justice James T. Blair is of the opinion that the matter is not involved in this case because of the majority holding that the rates fixed will produce a fair return. Our understanding, further, is that Justice D. E. Blair did not take part in the decision in this case, and that Justice Elder concurs only in the result, and that the Chief Justice alone condemns the service connection charge as being discriminatory.

In view of the fact that the majority opinion on the main case has been prepared by the Chief Justice, and that the said opinion contains the criticism of the service connection charge referred to,
164 undoubtedly there will be confusion in the minds of the Commission and the telephone utilities of the state as to whether or not the service connection charges are held to be discriminatory, or otherwise, by this Court.

We, therefore, believe that upon this motion for rehearing that the Court should set this matter definitely at rest, in order that no matter what further steps may be taken in regard to the questions at issue between the parties to this cause, the matter of service connection charges may be cleared up.

The reasoning of Justice Graves in regard to the matter is so clear and convincing that we do not think it necessary to make any additional argument, other than to refer to what has been said in our former briefs and to cite the opinion of Justice Graves.

The statement by the Court unequivocally as to whether or not a majority of the Court finds that the Columbia case is authority in regard to the service connection charge will, no doubt, be of great assistance to all parties concerned, irrespective of how this Court disposes of the other questions raised in this motion for rehearing.

165 Division of Toll Revenue.

We respectfully urge that the Court erred in holding that the division of toll revenue between the American Telephone and Telegraph Company and the Southwestern Bell Telephone Company, appellant, by which appellant receives 15 per cent of the originating calls, was an issue in the case. The Court overlooked the fact that the Commission had previously approved the contracts between the two companies and that respondents were thoroughly conversant with the terms of such contracts, and that at the time the decision complained of in this case was rendered the Commission handed

down a separate opinion approving all toll rates in the state. This matter was called to the attention of this Court only incidentally in the reply brief of appellant, for the reason that no such question was involved before the Commission, and only in the brief of respondents was the question at any time suggested as being relevant or material, and, therefore, counsel for appellant did not present the matter in the original brief.

The record in this case shows that the cost of handling a long-distance message is the same to the originating company if the call goes a few miles as if it goes a few hundred miles. The record shows that in the St. Louis case the average in 1913 from the American Telephone and Telegraph Company's business was 13.9 cents
166 per call under the 15 per cent contract, and that calculating 25 per cent of the Southwestern Bell Telephone Company's own long-distance calls allocated to the local exchange produced an amount of less than 5 cents per call. It must be evident that the percentage method would not be the proper way of making a comparison between what is allocated to the local exchange without knowing upon what basis the percentage is calculated.

In setting up a telephone rate case in a particular exchange in order to determine the question of the receipts of the business applicable to exchange service, it has been a custom with appellant, as well as with other associated companies, to set up 25 per cent of the toll receipts at that particular exchange as part of the revenue of the local exchange. It would be just as easy to set up 12½ per cent of the receipts for outbound calls and 12½ per cent of the receipts from inbound calls, except for the fact that it would take added bookkeeping in order to determine the exact amount of the inbound calls coming from stations widely separated over this and adjoining states. The custom was, at one time, we believe, to set the matter up in this way, but it was found by long practice that 25 per cent of the originating message receipts would amount to about the same thing, and this was adopted, especially in view of the fact that several hundred telephone companies in this territory had
167 agreed to accept that percentage of their originating revenue for handling the long-distance business at their exchanges.

The Commission understood the situation thoroughly and made no complaint with reference to the contracts. A little calculation will easily show that 15 per cent of an originating message passing over the American Telephone and Telegraph Company's lines, with the 20-cent maximum, will produce more than 25 per cent of short-line hauls over appellant's own lines. It is a matter of common knowledge that for many years the average call for the entire United States amounted to only 35 cents, and probably amounts to very little more at this time. Even should the average be as high as 50 cents, 25 per cent of this amount would be only 12½ cents. The evidence shows, however, that in the St. Louis case the average was less than 5 cents on appellant's lines coming into the City of St. Louis. In view of the fact that the toll revenue was not an issue, that all facts necessary for a decision were before the Commission, and that appellant has not been remiss in any duty, as suggested by

this Court, to furnish any additional testimony along this line, we respectfully, but earnestly, urge that the Court look into this matter further, and modify its opinion with respect to this question.

168 The record of over 2,500 printed pages, after every elimination possible had been made, ought to be some slight testimonial to the fact that appellant had tried faithfully to present all of the facts to the Commission, and had attempted to meet any burden that rested upon it to show that it was entitled to earn a fair return upon the value of its property.

Our only surmise as to why the Court has taken up this question is that counsel for respondents injected it into their brief, although certainly the question was not raised by the Commission in the hearings before that body and the toll rates and contracts for the state had been approved by the Commission.

Payment under License Contract.

Appellant respectfully represents that this Court has overlooked matters of fact presented by counsel for appellant with respect to the payment under the license contract which would be decisive of this case.

Without attempting to go fully into the question of the four and one-half per cent payment, we invite the Court's attention to pages 142 to 200 in our main brief, showing the evidence as to services received under this contract, which services have been entirely overlooked by the Court in its decision.

It is true that in an opinion written by the Commission in

169 the St. Louis case, in a valuation matter based upon testimony as to conditions in 1913, the Commission found that 55 per cent of the payment under the license contract at that time would be fair for the rental of the instruments and ignored all other elements of value in the contract. The futility of making any comparisons of whatever nature in conditions in 1913 with those in 1919 or 1920 may be seen in the fact that the findings at that time were based upon the value of the instruments furnished of only about one-half the amount that said instruments are selling for on the open market at the present time. In other words, if the telephone instrument had been selling on the open market in 1913 for the price for which it is selling now, upon the basis of the findings of the Commission, the entire four and one-half per cent payment should have been allowed for instrument service alone.

We call special attention of the Court to the testimony of Mr. Nims, president of the company, as set out on pages 149 and 150 of our main brief, to the effect that the amount paid under the agreement with the American Telephone and Telegraph Company was justified by the financial benefits alone, that he was familiar with the arrangement and knew the other benefits that accrued to the company, and that if the company did not have the arrangement he would think it good business to enter into it; that there were

170 no duplications of service under the arrangement, and that if it were not for the relationship the Southwestern Company

would be obliged to maintain very much more expensive departments than it does maintain and would not have been able for the amount it is now paying to have anything nearly as efficient as the present arrangement; that he considered the relationship absolutely indispensable; that under the condition of present prices this company would have been absolutely unable to meet such conditions without the help and assistance of the American Telephone and Telegraph Company.

We refer the Court to the testimony of the other witnesses setting out in detail and at great length the services rendered the appellant under this contract.

The decisions of courts and commissions, in which this contract has been considered, are so nearly unanimous as to be almost without exception. No well-considered decision of any court or commission can be found which decides that the entire payment should be eliminated. It is only in cases where the question was not essential to the decision of the case and full testimony had not been received that partial findings such as the Commission attempted in this case have been made.

With the testimony in the record, complete and satisfactory, the Commission was no more justified in disallowing a portion of the payment for these services than it would have been to dis-
171 allow a portion of the salaries paid to telephone operators for for their services or to any of the other employes of the company.

In at least two cases in the Federal Court in this territory this arrangement has been approved and the full amount of the payment has been allowed under circumstances substantially the same as those set out in the record in this case. The decisions in those two cases are found on pages 189 and 194 of our main brief.

In the case of Reed v. Central Union Tel. Co., a quotation from which is set out on page 195 of our brief, this matter was gone into thoroughly and after a bitter contest the Court approved the payment and held that the Union Company in equity shall be required to pay fair compensation for both the use of the telephone instruments and for the services rendered to it by the parent company.

The Supreme Court of Michigan reversed the Circuit Court of that state, which itself had reversed the action of the Railroad Commission of Michigan in approving the payment under this license contract.

We respectfully submit that the statement by the Court that "without the facilities afforded by the instruments in question, the telephone companies could not do business," shows the very great importance of a proper allowance in the expenses of appellant
172 for the payment not only for the instruments in question, but for the other very valuable services performed for it.

In its last analysis the question that must eventually be solved is whether or not the economical method of doing business adopted by appellant shall be abandoned and in lieu thereof the more expensive method suggested of giving up these services and attempting to perform for itself all engineering, accounting, legal, patent, financial, auditing and executive services shall be undertaken in

addition to purchasing in the open market instruments, the upkeep and carrying charges on which at the present prices will be approximately double what was shown by the evidence to be the case in 1913.

The amount of $174,048.00 upon this one item alone disallowed by the Commission, if allowed, will virtually balance the decrease in rates put in effect by the Commission and would of itself cause a reversal of this case. That the equities of the situation demand such reversal it seems to us must be apparent.

173 Conclusion.

For the reasons hereinbefore stated, and because the Court has overlooked the several questions presented herein which are decisive of this case, and because the decision is in conflict with controlling decisions of the Supreme Court of the United States, we respectfully urge that the Court grant this motion for a rehearing and upon such rehearing reverse this case and remand it with instructions that the Commission proceed to a proper determination of the issues involved.

Respectfully submitted,

D. A. FRANK,
J. W. GELLE,
T. O. STOKES,
Attorneys for Appellant.

JEFFRIES & CORUM,
Of Counsel.

173*a* And thereafter, on the 1st day of August, 1921, the following further proceedings were had and entered of record in said cause, to-wit:

In the Supreme Court of Missouri, April Term, 1921.

In Banc.

No. 21939.

STATE ex Rel. SOUTHWESTERN BELL TELEPHONE CO., Appellant,

vs.

PUBLIC SERVICE COMMISSION OF MISSOURI et al., Respondents.

Now at this day the Court having considered and fully understood the motion heretofore filed by the said appellant for a rehearing herein, doth order that said motion be, and the same is hereby, overruled.

174 J.

Southwestern Bell Telephone Company's petition for allowance of writ of error (Caption omitted):

175 *Petition for Allowance of Writ of Error.*

Now comes your petitioner, Southwestern Bell Telephone Company, by its Attorneys, D. A. Frank, J. W. Gleed and Thos. O. Stokes (Jeffries & Corum of Counsel), and respectfully shows:

On the 24th day of May, 1921, the Supreme Court of the State of Missouri, being the highest Court of the State of Missouri in which a decision of the suit could be had, rendered a judgment against your petitioner sustaining the findings of fact and law of the Public Service Commission of the State of Missouri and of the Circuit Court of Cole County, Missouri, and in which a motion for rehearing was denied on the first day of August, 1921, as will appear by reference to the record and proceedings in said cause.

176 Your petitioner respectfully claims the right to remove said record and judgment to the Supreme Court of the United States by writ of error under the statutes of the United States authorizing writs of error to State Courts, and particularly under Section 237 of the Judicial Code as amended, because in the record and proceedings had in said cause and in the rendition of said judgment manifest error hath happened to the great injury and damage of your petitioner in that:

1. The Court erred in affirming and sustaining the orders and decision of the Respondents and the trial Court and in holding that said orders and decision are not confiscatory, unreasonable, unjust and unlawful, and do not prevent Appellant from earning a reasonable and fair return upon the fair value of its property, and erred in holding that said orders and decision of Respondents and the trial Court are not contrary to and in violation of the Constitution of the United States and the Fourteenth Amendment thereto which prohibits the taking of property without due process of law and guarantees to all persons the equal protection of the laws, and erred in holding that said orders and decision of Respondents and the trial Court are not contrary to and in violation of Section 10 of Article 1 of the Constitution of the United States prohibiting the impairment of the obligation of Appellant's contracts and prohibiting the denial to the Appellant of the right to contract.

2. The Court erred in sustaining the orders and decision of the Respondents and the trial Court in refusing to hold that under the law the value of the property for rate-making purposes is the value thereof at the time of the investigation and not the value at

177 the time the porperty was constructed or acquired. The refusal of the Court to hold that the value of the property for rate-making purposes is the value thereof at the time of the investigation and not the value at the time the property was constructed or acquired results in a confiscation of Appellant's property and constitutes the taking of Appellant's property without due process of law contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

3. The Respondents and the trial Court neglected and refused to ascertain present value at all; they ascertained original cost and assumed that to be the sole basis of value; they declined to consider present reproduction cost for any purpose or in any degree. The Court sustained them in all these points and positions and in doing so erred and deprived the Appellant of its property without due process of law and denied to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

4. The Respondents and the trial Court excluded from their consideration a part of the property of Appellant which was used and useful in giving service to the public and refused to value it, or consider the same, or to allow any return thereon upon the claim (wholly unsustained by the evidence) that such property was built out of funds furnished by the public, and the Court erred in sustaining Respondents and the trial Court in so holding, thereby depriving the Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United State.

178 5. The Court erred in affirming the action of the Respondents and the trial Court in finding that the value of the Appellant's property used and useful in furnishing telephone service in the State of Missouri was only $20,400,000.00 instead of $31,355,278.00 which as shown by the uncontradicted and undisputed evidence in the case was the present value thereof, and thereby deprived Appellant of its property without due process of law and denied to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

6. The Court erred in not finding that the trial Court committed error in sustaining the action of the Respondents in adopting the original cost of Appellant's property as the basis upon which it should act in determining whether the rates then in force were unlawful instead of finding and using the present value of the property as such basis, thereby depriving the Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

7. The Court erred in not finding that the orders and decision of the Respondents and the trial Court are unreasonable, unjust, unfair, discriminatory, confiscatory, unlawful, unconstitutional, void and unenforceable, and are contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States prohibiting the taking of property without due process of law and prohibiting the denial to the Appellant of the equal protection of the laws and

179 are contrary to and in violation of Section 10 of Article I of the Constitution of the United States prohibiting the impairment of Appellant's contracts and prohibiting the denial to the Appellant of the right to contract.

8. The Court erred in sustaining the orders and decision of the Respondents and the trial Court in not setting aside said orders and decision and in not allowing Appellant the amount shown by the undisputed testimony as the going value of Appellant's business, thereby depriving Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

9. The Court erred in sustaining the action of the trial Court in not holding that Respondents had ignored the evidence in the case as to going value when they allowed the sum of $1,859,692.85 for intangibles, while the undisputed evidence showed the going value of Appellant's property to be $5,594,816.00, which latter figure was shown by the undisputed evidence to be the going value of Appellant's property, thereby depriving Appellant of its property without due process of law and denying to it the equal protection of the law contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

10. The Court erred in sustaining the trial Court in affirming that part of Respondents' orders and decision which deducted $17,513.52 from Appellant's working capital contrary to the fact that the undisputed evidence in the case showed that said deduction should not have been made, thereby depriving the Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

180 11. The Respondents and the trial Court found that Appellant's expenses were lower than the undisputed evidence showed they actually were and further found that Appellant's gross earnings were greater than the undisputed evidence showed they actually were, and the Court sustained the Respondents and the trial Court in these findings and erred in so doing and thereby deprived Appellant of its property without due process of law and denied to it the equal protection of the laws contrary to and in violation of the fourteenth Amendment to the Constitution of the United States.

12. The Respondents and the trial Court found the net earnings of the Appellant's property in the State of Missouri to be much larger than they actually were according to the undisputed evidence and the Court sustained them in so doing, thereby depriving Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

13. The Respondents and the trial Court adjusted Appellant's income so as to include certain income not fully reflected in the actual figures submitted to the Respondents but failed and refused to adjust certain corresponding elements of expense also not fully reflected in the actual figures submitted to the Respondents, and the

Court sustained them in so doing and thereby erred and thereby deprived the Appellant of its property without due process of law and denied to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

181 14. The Respondents had before them and considered the actual income received and expense incurred by Appellant in the State of Missouri for the months of May, June, July and August, 1919. Certain additional increases of income accrued about the 15th of June and continued thereafter. The Respondents adjusted the income to what it would have been if these additional incomes had been in effect during the whole four months. On the other hand, there were heavy increases in rates of wages put into effect the first of July and the first of August. Respondents neglected and refused to adjust these changes in expense or to compute or to consider what the expenses would have been if these increases in wages had been in effect during the entire four months. The Court sustained the trial Court and the Respondents in thus adjusting the income and refusing to adjust the expense, thereby committing error and thereby depriving the Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

15. The Respondents refused to allow an adequate amount for reserve for depreciation for Appellant's property, which action of the Respondents was erroneously sustained by the trial Court and by the Missouri Supreme Court, thereby constituting error on the part of the Court and thereby depriving the Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

16. The Court erred in affirming the action of the trial Court and the Respondents in refusing to hold that Appellant should be
182 allowed credit for the full sum paid by it to the American Telephone and Telegraph Company under the four and one-half per cent or license contract, thereby invading and interfering with the right of Appellant to manage its business, and thereby denying to Appellant the right to manage its business, and thereby substituting the judgment of the Respondents for the judgment of Appellant's officers and directors in the management of Appellant's business, thereby depriving Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States, and thereby impairing the obligations of Appellant's contracts and denying to it the right to contract, contrary to and in violation of Section 10 of Article I of the Constitution of the United States.

17. The Court erred in holding that the compensation paid by the American Telephone and Telegraph Company to the Appellant

for work done by Appellant in handling toll messages, by which Appellant receives 15% of the originating revenue from the American Telephone and Telegraph Company, was material, in view of the fact that the Respondents had approved the contracts between the Appellant and the American Telephone and Telegraph Company and such contracts and such toll revenues were not in issue before the Court, thereby depriving Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States, and thereby impairing the obligations of Appellant's contracts and denying to it the right of contract contrary to and in violation of Section 10 of Article I of the Constitution of the United States.

183 18. The Court erred in affirming the action of the trial Court in sustaining Respondents' orders and decision fixing 6.81% as the maximum return Appellant could earn on any value of its property and thereby deprived Appellant of its property without due process of law and denied to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

19. The Court erred in holding that 6.81% is a fair return to be earned by Appellant upon its property in the State of Missouri contrary to the undisputed evidence that 10% is the minimum fair return, thereby depriving Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

20. The Court erred in affirming the action of the trial Court in sustaining the Respondents in their refusal to allow Appellant a reasonable or fair return upon the fair value of its property and in refusing to fix a fair valuation upon its property, thereby depriving Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

21. The Court erred in sustaining the trial Court in finding that the rates in effect at the time of the hearing and which were put into effect under the orders of the Postmaster General were not established by lawful authority and, therefore, were not legal rates, and likewise erred in holding that the Respondents had the right to change such rates without proof that the rates then being charged were unlawful, and likewise erred in holding that the net earnings amounted to 7.9% of the value of Appellant's property and
184 that such earnings were unreasonable and unlawful, thereby taking Appellant's property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

22. The Court erred in affirming the action of the trial Court in sustaining the orders and decision of the Respondents in reducing the schedule of exchange rates previously charged by Appellant in the face of the undisputed evidence that the schedules of exchange rates, and each and every one of them, so ordered by the Respondents are unreasonable, unjust, unfair, discriminatory, confiscatory and insufficient to enable Appellant to earn a fair return on the fair value of its property in each of its said exchanges in the State of Missouri, thereby depriving Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

23. The Court erred in sustaining the action of the trial Court in refusing to find that Respondents should have allowed Appellant to make a fair and reasonable charge for services in "change of name," "move," and for the "installation of instruments" for its patrons. The advisability or wisdom of putting into effect a schedule of such charges is purely a matter of management, with which neither the Respondents, the trial Court nor the Supreme Court of Missouri have any right to interfere, so long as such charges are reasonable and not discriminatory. The orders and decision of Respondents and the trial Court disallowing any such charges are discriminatory, unjust, unlawful and confiscatory and invade and interfere with the
185 right of Appellant to manage its business and deny to the Appellant the right to manage its business and substitute the judgment of the Respondents for the Judgment of the Appellant's officers and directors in the management of its business, and the action of the Court in sustaining said orders and decision of Respondents and the trial Court is error and results in depriving Appellant of its property without due process of law and in denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

24. The Court erred in affirming the action of the trial Court in sustaining the orders and decision of the Respondents in abolishing as discriminatory and unlawful the charges for moves, changes and service connections as being unwarranted and unauthorized in that such orders and decision invaded and interfered with the Appellant's right to manage its business and denied to the Appellant the right to manage its business and substituted the judgment of Respondents for the judgment of Appellant's officers and directors in the management of its business, and thereby deprived Appellant of its property without due process of law and denied to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

25. The Court erred in holding that the power to establish rates is not primarily vested in the Appellant but is vested in the Respondents, and further erred in holding that the Respondents
186 have authority to interfere with the rates established by the Appellant in the absence of a finding by the Respondents after notice and hearing that the rates so established by the

Appellant are for some reason unlawful, thereby depriving Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

Your petitioner further shows to the Court that by reason of the aforesaid matters and things there is drawn in question the validity of an authority exercised under a statute of the State of Missouri on the ground that the authority exercised under said statute of the State of Missouri is repugnant to the Constitution of the United States, and the decision was in favor of the validity of the authority exercised under said statute of the State of Missouri, and also that a right, privilege and immunity was claimed by your petitioner under the Constitution of the United States and was set up and brought into question and the decision was against the right, title and privileges so set up by your petitioner.

Considering itself aggrieved by the final decision of the Supreme Court of Missouri in rendering judgment against it in the above entitled cause, your petitioner prays a writ of error from said decision and judgment to the Supreme Court of the United States and an order requiring that the parties to this cause be and remain in statu quo pending the final decision of the Supreme Court of the United States and an order fixing the amount of the bond the Court deems necessary to require to keep the parties hereto in status quo
187 pending the final decision of this cause by the Supreme Court of the United States, and your petitioner will ever pray.

D. A. FRANK,
J. W. GLEED,
THOS. O. STOKES,
Attorneys for Petitioner.

JEFFRIES & CORUM,
Of Counsel.

STATE OF MISSOURI,
City of Jefferson, ss:

Let the writ of error issue upon the execution of a bond by the Southwestern Bell Telephone Company in the sum of $10,000.00, which bond is in addition to the bonds heretofore furnished by the Southwestern Bell Telephone Company in this cause, and it is further ordered that the orders heretofore issued in this cause by the Circuit Court of Cole County, Missouri, relating to the collection and deposit of rates in excess of the rates authorized by the decision of the Public Service Commission of Missouri, the Circuit Court of Cole County, Missouri, and this Court, be and remain in full force and effect pending the final decision of the Supreme Court of the United States in this cause. Bond to be approved by the Acting Chief Justice.

JAMES T. BLAIR,
Chief Justice of the Supreme Court of Missouri.

Dated this 3rd day of August, 1921.

188 K.

Southwestern Bell Telephone Company's assignments of error (Caption omitted):

189 *Assignments of Error.*

Plaintiff in error, Southwestern Bell Telephone Company, complains of Public Service Commission of Missouri and John A. Kurtz, Edwin J. Bean, Hugh McIndoe, Noah W. Simpson and Edward Flad, composing the Public Service Commission of Missouri, and says that there is manifest error in the record and proceedings in the above entitled cause and in the decision and judgment of the Supreme Court of the State of Missouri in this, to-wit:

1. The Court erred in affirming and sustaining the orders and decision of the Respondents and the trial Court and in holding that said orders and decision are not confiscatory, unreasonable, unjust and unlawful, and do not prevent Appellant from earning
190 a reasonable and fair return upon the fair value of its property, and erred in holding that said orders and decision of Respondents and the trial Court are not contrary to and in violation of the Constitution of the United States and the Fourteenth Amendment thereto which prohibits the taking of property without due process of law and guarantees to all persons the equal protection of the laws, and erred in holding that said orders and decision of Respondents and the trial Court are not contrary to and in violation of Section 10 of Article I of the Constitution of the United States prohibiting the impairment of the obligation of Appellant's contracts and prohibiting the denial to the Appellant of the right to contract.

2. The Court erred in sustaining the orders and decision of the Respondents and the trial Court in refusing to hold that under the law the value of the property for rate-making purposes is the value thereof at the time of the investigation and not the value at the time the property was constructed or acquired. The refusal of the Court to hold that the value of the property for rate-making purposes is the value thereof at the time of the investigation and not the value at the time the property was constructed or acquired results in a confiscation of Appellant's property and constitutes the taking of Appellant's property without due process of law contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

3. The Respondents and the trial Court neglected and refused to ascertain present value at all; they ascertained original cost and assumed that to be the sole basis of value; they declined to consider present reproduction cost for any purpose or in any degree.
191 The Court sustained them in all these points and positions and in doing so erred and deprived the Appellant of its

property without due process of law and denied to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

4. The Respondents and the trial Court excluded from their consideration a part of the property of Appellant which was used and useful in giving service to the public and refused to value it, or consider the same, or to allow any return thereon upon the claim (wholly unsustained by the evidence) that such property was built out of funds furnished by the public, and the Court erred in sustaining Respondents and the trial Court in so holding, thereby depriving the Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

5. The Court erred in affirming the action of the Respondents and the trial Court in finding that the value of the Appellant's property used and useful in furnishing telephone service in the State of Missouri was only $20,400,000.00 instead of $31,355,278.00, which as shown by the uncontradicted and undisputed evidence in the case was the present value thereof, and thereby deprived Appellant of its property without due process of law and denied to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

192 6. The Court erred in not finding that the trial Court committed error in sustaining the action of the Respondents in adopting the original cost of Appellant's property as the basis upon which it should act in determining whether the rates then in force were unlawful instead of finding and using the present value of the property as such basis, thereby depriving the Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

7. The Court erred in not finding that the orders and decision of the Respondents and the trial Court are unreasonable, unjust, unfair, discriminatory, confiscatory, unlawful, unconstitutional, void and unenforceable, and are contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States prohibiting the taking of property without due process of law and prohibiting the denial to the Appellant of the equal protection of the laws and are contrary to and in violation of Section 10 of Article I of the Constitution of the United States prohibiting the impairment of Appellant's contracts and prohibiting the denial to the Appellant of the right to contract.

8. The Court erred in sustaining the orders and decision of the Respondents and the trial Court in not setting aside said orders and decision and in not allowing Appellant the amount shown by the undisputed testimony as the going value of Appellant's business, thereby depriving Appellant of its property without due process of

law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

193 9. The Court erred in sustaining the action of the trial Court in not holding that Respondents had ignored the evidence in the case as to going value when they allowed the sum of $1,859,692.85 for intangibles, while the undisputed evidence showed the going value of Appellant's property to be $5,594,816.00, which latter figure was shown by the undisputed evidence to be the going value of Appellant's property, thereby depriving Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

10. The Court erred in sustaining the trial Court in affirming that part of Respondents' orders and decision which deducted $17,513.52 from Appellant's working capital contrary to the fact that the undisputed evidence in the case showed that said deduction should not have been made, thereby depriving the Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

11. The Respondents and the trial Court found that Appellant's expenses were lower than the undisputed evidence showed they actually were and further found that Appellant's gross earnings were greater than the undisputed evidence showed they actually were, and the Court sustained the Respondents and the trial Court in these findings and erred in so doing and thereby deprived Appellant of its property without due process of law and denied to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

194 12. The Respondents and the trial Court found the net earnings of the Appellant's property in the State of Missouri to be much larger than they actually were according to the undisputed evidence and the Court sustained them in so doing, thereby depriving Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

13. The Respondents and the trial Court adjusted Appellant's income so as to include certain income not fully reflected in the actual figures submitted to the Respondents but failed and refused to adjust certain corresponding elements of expense also not fully reflected in the actual figures submitted to the Respondents, and the Court sustained them in so doing and thereby erred and thereby deprived the Appellant of its property without due process of law and denied to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

14. The Respondents had before them and considered the actual income received and expense incurred by Appellant in the State of Missouri for the months of May, June, July and August, 1919. Certain additional increases of income accrued about the 15th of June and continued thereafter. The Respondents adjusted the income to what it would have been if these additional incomes had been in effect during the whole four months. On the other hand, there were heavy increases in rates of wages put into effect the first of July and the first of August. Respondents neglected and refused to adjust these changes in expense or to compute or to consider what the expenses would have been if these increases in wages had been in effect during the entire four months. The Court sustained the trial Court and the Respondents in thus adjusting the income and refusing to adjust the expense, thereby committing error and thereby depriving the Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

195

15. The Respondents refused to allow an adequate amount for reserve for depreciation for Appellant's property, which action of the Respondents was erroneously sustained by the trial Court and by the Missouri Supreme Court, thereby constituting error on the part of the Court and thereby depriving the Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

16. The Court erred in affirming the action of the trial Court and the Respondents in refusing to hold that Appellant should be allowed credit for the full sum paid by it to the American Telephone and Telegraph Company under the four and one-half per cent or license contract, thereby invading and interfering with the right of Appellant to manage its business, and thereby denying to Appellant the right to manage its business, and thereby substituting the judgment of the Respondents for the judgment of Appellant's officers and directors in the management of Appellant's business, thereby depriving Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States, and thereby impairing the obligations of Appellant's contracts and denying to it the right to contract contrary to and in violation of Section 10 of Article I of the Constitution of the United States.

196

17. The Court erred in holding that the compensation paid by the American Telephone and Telegraph Company to the Appellant for work done by Appellant in handling toll messages, by which Appellant receives 15% of the originating revenue from the American Telephone and Telegraph Company, was material, in view of the fact that the Respondents had approved the contracts between the Appellant and the American Telephone and Telegraph

Company and such contracts and such toll revenues were not in issue before the Court, thereby denying Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States, and thereby impairing the obligations of Appellant's contracts and denying to it the right of contract contrary to and in violation of Section 10 of Article I of the Constitution of the United States.

18. The Court erred in affirming the action of the trial Court in sustaining Respondents' orders and decision fixing 6.81% as the maximum return Appellant could earn on any value of its property and thereby deprived Appellant of its property without due process of law and denied to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

19. The Court erred in holding that 6.81% is a fair return to be earned by Appellant upon its property in the State of
197 Missouri contrary to the undisputed evidence that 10% is the Minimum fair return, thereby depriving Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

20. The Court erred in affirming the action of the trial Court in sustaining the Respondents in their refusal to allow Appellant a reasonable or fair return upon the fair value of its property and in refusing to fix a fair valuation upon its property, thereby depriving Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

21. The Court erred in sustaining the trial Court in finding that the rates in effect at the time of the hearing and which were put into effect under the orders of the Postmaster General were not established by lawful authority and, therefore, were not legal rates, and likewise erred in holding that the Respondents had the right to change such rates without proof that the rates then being charged were unlawful, and likewise erred in holding that the net earnings amounted to 7.9% of the value of Appellant's property and that such earnings were unreasonable and unlawful, thereby taking Appellant's property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

22. The Court erred in affirming the action of the trial Court in sustaining the orders and decision of the Respondents in reducing the schedule of exchange rates previously charged by Appellant in the face of the undisputed evidence that the schedules of exchange rates, and each and every one of them, so ordered by the
198 Respondents are unreasonable, unjust, unfair, discriminatory, confiscatory and insufficient to enable Appellant to earn a

fair return on the fair value of its property in each of its said exchanges in the State of Missouri, thereby depriving Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

23. The Court erred in sustaining the action of the trial Court in refusing to find that Respondents should have allowed Appellant to make a fair and reasonable charge for services in "change of name," "move," and for the "installation of instruments" for its patrons. The advisability or wisdom of putting into effect a schedule of such charges is purely a matter of management, with which neither the Respondents, the trial Court nor the Supreme Court of Missouri have any right to interfere, so long as such charges are reasonable and not discriminatory. The orders and decision of Respondents and the trial Court disallowing any such charges are discriminatory, unjust, unlawful and confiscatory and invade and interfere with the right of Appellant to manage its business and deny to the Appellant the right to manage its business and substitute the judgment of the Respondents for the judgment of the Appellant's officers and directors in the management of its business, and the action of the Court in sustaining said orders and decision of Respondents and the trial Court is error and results in depriving Appellant of its property without due process of law and in denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

199 24. The Court erred in affirming the action of the trial Court in sustaining the orders and decision of the Respondents in abolishing as discriminatory and unlawful the charges for moves, changes and service connections as being unwarranted and unauthorized in that such orders and decision invaded and interfered with the Appellant's right to manage its business and denied to the Appellant the right to manage its business and substituted the judgment of Respondents for the judgment of Appellant's officers and directors in the management of its business, and thereby deprived Appellant of its property without due process of law and denied to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

25. The Court erred in holding that the power to establish rates is not primarily vested in the Appellant but is vested in the Respondents, and further erred in holding that the Respondents have authority to interfere with the rates established by the Appellant in the absence of a finding by the Respondents after notice and hearing that the rates so established by the Appellant are for some reason unlawful, thereby depriving Appellant of its property without due process of law and denying to it the equal protection of the laws contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States.

For which errors the Plaintiff in error prays that the judgment of the Supreme Court of the State of Missouri may be reversed and

that the cause be remanded with such directions as, according to law and justice, shall seem meet and proper to the Supreme Court of the United States.

D. A. FRANK,
J. W. GLEED,
THOS. O. STOKES,
Attorneys for Appellant.

JEFFRIES & CORUM,
Of Counsel.

200 L.

Writ of Error (caption omitted):

201 *Writ of Error.*

UNITED STATES OF AMERICA, *ss:*

The President of the United States of America to the Honorable the Judges of the Supreme Court of the State of Missouri, Greeting:

Because in the record and proceedings as also in the rendition of the judgment of a plea which is in the said Court before you, or some of you, being the highest Court of law or equity of the said State in which a decision could be had in said suit between the Southwestern Bell Telephone Company, a corporation, and the Public Service Commission of Missouri, and John A. Kurtz, Edwin J. Bean, Hugh McIndoe, Noah W. Simpson and Edward Flad, composing the Public Service Commission of Missouri, wherein was drawn in question the validity of a treaty or statute of, or an authority
202 exercised under, the United States, and the decision was against their validity; or wherein was drawn in question the validity of a statute of, or an authority exercised under, said State, on the ground of their being repugnant to the Constitution, treaties or laws of the United States, and the decision was in favor of such their validity; or wherein was drawn in question the construction of a clause of the Constitution, or of a treaty, or statute of, or commission held under the United States, and the decision was against the title, right, privilege or exemption specially set up or claimed under such clause of the said Constitution, treaty, statute or commission; a manifest error hath happened, to the great damage of the said Southwestern Bell Telephone Company, as by its complaint appears.

We being willing that error, if any hath been, should be duly corrected, and full and speedy justice done to the parties aforesaid in this behalf, do command you, if judgment be therein given, that then under your seal, distinctly and openly, you send the record and proceedings aforesaid, with all things concerning the same, to the Supreme Court of the United States, together with this writ, so that you have the same in the Supreme Court at Washington within 30 days from the date hereof, that the record and proceedings aforesaid being inspected, the said Supreme Court may cause

further to be done therein to correct that error, what of right, and according to the laws and customs of the United States should be done.

Witness the Honorable William Howard Taft, Chief Justice of the Supreme Court of the United States, the 4th day of August
203 in the year of our Lord, One Thousand, Nine Hundred and Twenty-one.

Issued at office in the City of Jefferson City with the seal of the District Court of the United States for the Central Division of the Western Judicial District of Missouri and dated as aforesaid.

EDWIN R. DURHAM,
Clerk of the District Court of the United States for the Central Division of the Western Judicial District of Missouri.
By H. C. GEISBERG,
Deputy.

Allowed August 4th, 1921.
JAMES T. BLAIR,
Chief Justice of the Supreme Court of Missouri.

204 M.

Order of allowance of writ of error (Caption omitted):

205 *Order of Allowance of Writ of Error.*

The matter herein coming on to be heard upon the petition of the Southwestern Bell Telephone Company, Appellant, for a writ of error from the Supreme Court of the United States to the Supreme Court of the State of Missouri, and upon an examination of the petition therefor and the record in said matter, and desiring to give the petitioner an opportunity to present in the Supreme Court of the United States the questions submitted by the record in this cause, it is ordered that a writ of error be and is hereby allowed to this Court from the Supreme Court of the United States and that the bond presented by the petitioner, Southwestern Bell Tele-
206 phone Company, be and the same is hereby approved, and it is further ordered that pending the final decision of this cause by the Supreme Court of the United States the parties hereto remain in statu quo pending the final decision of the cause by the Supreme Court of the United States that the orders relating to the collection and deposit of rates in excess of the rates authorized by the decision of the Public Service Commission of Missouri, the Circuit Court of Cole County, Missouri, and this Court, be and remain in full force and effect pending the final decision of the Supreme Court of the United States in this cause.

JAMES T. BLAIR,
Chief Justice of the Supreme Court of Missouri.

Dated this 3rd day of August, 1921.

207 N.

Southwestern Bell Telephone Company's bond required by the Supreme Court of Missouri (Caption omitted):

208 *Bond.*

Know all men by these presents, that we, the Southwestern Bell Telephone Company, a corporation, organized and existing under the laws of the State of Missouri as principal, and Sam B. Cook, Howard Cook, Cletus V. Zuber, and L. W. Weiler, as sureties are held and firmly bound unto the above named Public Service Commission of Missouri, and John A. Kurtz, Edwin J. Bean, Hugh McIndoe, Noah W. Simpson, and Edward Flad, composing the Public Service Commission of Missouri, in the full and just sum of ten thousand ($10,000.00) dollars, to be paid to the said Public Service Commission and to John A. Kurtz, et al., composing the Public Service Commission of Missouri, their heirs, executors, administrators or assigns, to which payments well and truly to be made, we bind ourselves, our heirs or assigns, jointly and severally, firmly by these presents.

Sealed with our seals, and dated this 4th. day of August 1921.

Whereas, the above named Southwestern Bell Telephone Company, seeks to prosecute its writ or *w*rror in the Supreme Court of the United States to reverse the judgment, rendered in the above
209 entitled cause by the Supreme Court of Missouri. Now therefore, the condition of this obligation is such that if the above named Southwestern Bell Telephone Company shall prosecute its writ of error to effect, and answer all damages and costs that may be adjudged against it if it shall fail to make good its plea, then this obligation shall be void, otherwise to remain in full force and effect.

SOUTHWESTERN BELL TELEPHONE COMPANY,
By THOS. O. STOKES,
Its Attorney.
SAM B. COOK.
HOWARD COOK.
CLETUS V. ZUBER.
L. W. WEILER.

The above bond approved August 4th 1921.

A. M. WOODSON,
Acting Chief Justice.

210 O.

Citation (Caption omitted):

211 *Citation.*

THE UNITED STATES OF AMERICA, *ss:*

The President of the United States to Public Service Commission of Missouri and John A. Kurtz, Edwin J. Bean, Hugh McIndoe, Noah W. Simpson, and Edward Flad, composing the Public Service Commission of Missouri, Greeting:

You are hereby cited and admonished to be and appear at and before the Supreme Court of the United States at Washington, D. C. within 30 days from the date hereof pursuant to a writ of error filed in the office of the Clerk of the Supreme Court of the State of Missouri, wherein the Southwestern Bell Telephone Company is plaintiff in error and you are defendants in error, to show cause, if any there be, why the judgment rendered against said plaintiff in error, as in said writ of error mentioned, should not be cor-
212 rected and why speedy justice should not be done the parties in that behalf.

Witness the Honorable James T. Blair, Chief Justice of the Supreme Court of the State of Missouri, this 3rd day of August 1921.

JAMES T. BLAIR,
Chief Justice of the Supreme Court of the State of Missouri.

Attest:
J. D. ALLEN,
Clerk of the Supreme Court of the State of Missouri,
By PATRICIA NACY,
Deputy Clerk.

We hereby acknowledge service of the foreging citation this 4th day of August, 1921.

RICHARD PERRY SPENCER AND
JAMES D. LINDSAY,
Attorneys for Defendants in Error.

213 P.

Return to writ of error (Caption omitted):

214 *Return to Writ of Error.*

STATE OF MISSOURI, *ss:*

In obedience to the command of the within writ of error, I herewith transmit to the Supreme Court of the United States a duly certified transcript of the record and proceedings in the within entitled cause, together with all things concerning the same.

In testimony whereof, I have hereunto subscribed my name and affixed the seal of the Supreme Court of Missouri this 9th day of August, 1921.

J. D. ALLEN,
Clerk of the Supreme Court
of the State of Missouri,
By PATRICIA NACY,
Deputy Clerk.

215 Q.

Præcipe for transcript furnished Clerk of the Supreme Court of Missouri (Caption omitted):

216 *Præcipe for Transcript.*

To the Clerk of the Supreme Court of the State of Missouri:

You will please prepare a certified transcript of the record upon the writ of error allowed in the above entitled cause on the 3rd day of August, 1921, for a review of the judgment in said cause by the Supreme Court of the United States and include in such transcript the following papers:

A complete copy of the abstract of the record and a copy of each of the additional and supplemental abstracts of the record prepared by both parties and filed in your office and upon which said cause was heard and determined in the Supreme Court of the State of Missouri.

217 You will also include in said transcript of the record the following:

1. Judgment of the Supreme Court of the State of Missouri.

2. Appellant's motion for rehearing.

3. Order or orders overruling Appellant's motion for rehearing.

4. Opinion of the Supreme Court of the State of Missouri, including separate concurring and dissenting opinions of the Judges thereof.

5. Petition for writ of error and order allowing same.

6. Assignments of error.

7. Bond required by the Supreme Court of the State of Missouri in addition to the bonds of $200,000.00, $2,500.00 and $500.00, respectively, heretofore given in this cause by Appellant, required by the Supreme Court of Missouri to keep the parties hereto in statuo quo pending the final decision of this cause by the Supreme Court of the United States.

8. Citation on writ of error and acknowledgment of service.

9. Original writ of error with your return thereto.

10. Certificate of lodgment of copy of writ of error for the use of the defendant in error and lodgment of original additional bond.

11. Your certificate of authentication of the record.

D. A. FRANK,
J. W. GLEED,
THOS. O. STOKES,
Attorneys for Appellant.

JEFFRIES & CORUM,
Of Counsel.

218 We, the undersigned, counsel for Public Service Commission of Missouri and John A. Kurtz, Edwin J. Bean, Hugh McIndoe, Noah W. Simpson and Edward Flad, composing the Public Service Commission of Missouri, Respondents herein, hereby acknowledge service of a copy of the foregoing praecipe for transcript this 4th day of August, 1921, and agree that the matters and things called for in the foregoing praecipe may be taken and considered as the entire record in this cause.

RICHARD PERRY SPENCER AND
JAMES D. LINDSAY,
Attorneys for Respondents.

219 R.

Praecipe for printing the record furnished Clerk of the Supreme Court of the United States (Caption omitted):

220 *Praecipe.*

To the Clerk of the Supreme Court of the United States:

It is agreed by and between the parties to the above entitled cause that you may print only the following papers, and that the same may be taken and considered as the entire record in this cause, to-wit:

1. Order of the Public Service Commission of Missouri of August 4th, 1919, initiating this cause.

2. Answer of the Southwestern Bell Telephone Company to said order of said Commission. (Opinions & orders of the Commission contained in & printed as a part of the agreed abstract of the evidence.)

3. Amended motion for a rehearing before said Public Service Commission.

221 4. Order overruling said amended motion for a rehearing.

5. Petition for review filed in the Circuit Court of Cole County, Missouri, by the Southwestern Bell Telephone Company.

6. Judgment of the Circuit Court of Cole County sustaining the orders of the Public Service Commission of Missouri.

7. Motion for a new trial filed in the Circuit Court of Cole County, Missouri.

8. Order of the Circuit Court of Cole County, Missouri overruling motion for new trial.

9. Application and affidavit of Southwestern Bell Telephone Company for an appeal to the Supreme Court of Missouri, and allowance of the appeal.

10. Southwestern Bell Telephone Company's motion for rehearing in the Supreme Court of Missouri.

11. Record of all of the proceedings in the Supreme Court of Missouri excepting the opinions of the Justices which are to be printed with the Agreed Abstract of the Evidence.

12. Petition for allowance of writ of error.

13. Assignments of error.

14. Writ of error.

15. Order of allowance of writ of error.

16. Bond.

17. Citation.

18. Return to writ of error.

222 19. Præcipe for transcript.

20. Agreed abstract of the evidence.

Dated at Jefferson City, Missouri, October 31st, 1921.

FREDERICK W. LEHMANN,
THOS. O. STOKES,
Attorneys for Plaintiff in Error.
R. P. SPENCER,
JAMES D. LINDSAY,
Attorneys for Defendants in Error.

222*a* STATE OF MISSOURI, *set:*

I, J. D. Allen, Clerk of the Supreme Court of the State of Missouri, do hereby certify that the above and foregoing is a full true and complete transcript of the record and proceedings in the cause of Missouri at the relation of the Southwestern Bell Telephone Company, a corporation, appellant, vs. Public Service Commission of Missouri and William G. Busbym Edwin J. Bean, David E. Blair, Noah W. Simpson, and Edward Flad, composing the Public Service Commission of Missouri, Respondents, No. 21,939, as fully as called for in the within præcipe for transcript, and as the same appears of record and on file in my office; to which said transcript are attached, and made part thereof petition for allowance of writ of error, order

of allowance of writ of error, copy of bond, writ of error, citation on writ of error and acknowledgement of service thereof, and præcipe for transcript, with acknowledgment of service of a copy thereof.

In testimony whereof, I have hereunto set my hand and affixed the seal of said Supreme Court of the State of Missouri, at my office in the City of Jefferson, State aforesaid, this 9th day of August 1921.

J. D. ALLEN,
Clerk of the Supreme Court
of the State of Missouri,
By PATRICIA NACY,
Deputy.

223 In the Supreme Court of the United States, October Term, 1921.

No. 496.

STATE at the Relation of SOUTHWESTERN BELL TELEPHONE COMPANY, a Corporation, Plaintiff in Error,

vs.

PUBLIC SERVICE COMMISSION OF MISSOURI and JOHN A. KURTZ, Edwin J. Bean, Hugh McIndoe, Noah W. Simpson, and Edward Flad, Composing the Public Service Commission of Missouri, Defendants in Error.

PART II.

Agreed Abstract of the Evidence.

It is hereby stipulated and agreed by and between the parties to the above entitled cause that in view of the great size of the record in this cause and for the convenience of the Court and Counsel, the following is to be taken and considered by the Court as an agreed abstract of all the evidence in this cause.

Division I.

History:

The Southwestern Bell Telephone Company (hereinafter referred to as the "Southwestern Company") is a corporation organized under the laws of the State of Missouri. It is and was at all the times hereinafter mentioned operating local and long distance tele-
224 phone lines throughout the greater part of the State of Missouri.

The appellant, Southwestern Bell Telephone Company, owns and operates telephone exchanges in more than seventy-five of the principal cities and towns of Missouri, not including Kansas City, and long distance toll lines reaching all parts of the state, connecting with its own local exchanges and with the systems of independent telephone companies.

Appellant is the corporate survivor of various antecedent companies, and its system of local exchanges and toll lines constitutes the aggregate result of the activities of the companies, and financial interests, collectively and generally known as the "Bell Telephone System."

In July, 1918, the United States Government took possession of, managed, operated and controlled all telephone and telegraph properties in the country and from August 1, 1918, to August 1, 1919, the entire telephone business of the Southwestern Bell Telephone Company in Missouri and elsewhere was possessed, controlled, managed and operated by the President, through Mr. Albert S. Burleson, Postmaster General of the United States.

Prior to the taking of possession of the telephone systems by the Federal Government, each one of the local exchanges, owned and operated by appellant, was treated, so far as it was treated at all, by the Public Service Commission as a separate and independent unit for rate-making purposes, and the rates specified for each local exchange were based upon the facts pertinent to that exchange.

This case involves the validity of an order of the Missouri Public Service Commission affecting the rates of the Southwestern Company throughout the State of Missouri.

225 The year of Government control and operation of the telephone lines terminated July 31, 1919. During this period the Postmaster General made some increases in rates. Immediately after the expiration of this period, on August 4, 1919, the Missouri Public Service Commission ordered the Southwestern Company to show cause why it should be permitted to continue to charge these increased rates. In response to this order the Southwestern Company filed its answer, setting out that on account of increases in the cost of labor and material, the Postmaster General's rates were not only not too high, but were wholly inadequate.

Hearings were had in September, October and November, 1919, and upon November 26, 1919, the Commission handed down its decision and order which will hereinafter be set forth in full.

The Commission reduced some exchange rates while approving others. The reduction in the exchange rates aggregated the annual sum of $92,000.00, and the Commission abolished entirely the service connection charges which were producing on an annual basis, $118,000.00. The Commission approved the toll rates which were put into effect by the Postmaster General. The Commission designated the rates approved and the rates reduced as temporary rates. The total reduction in annual revenue made by the Commission's decision was about $210,000.00 per year.

226 After an application for rehearing had been duly made and overruled, the case, by writ of review, was duly appealed to the Circuit Court of Cole County, Missouri, where it was heard upon the record which was before the Commission, which was the record before the Supreme Court of Missouri. Pending its decision the Circuit Court suspended the Commission's orders and ordered the difference between the rates allowed by the Commission and the Postmaster General's rates deposited in a bank and further

ordered the Southwestern Company to furnish a $100,000.00 bond to insure that such difference or excess would be refunded to the subscribers. On February 3, 1920, the Circuit Court rendered its judgment confirming the orders of the Public Service Commission. Thereupon, on February 3, 1920, an appeal was taken to the Supreme Court of Missouri, and on the same day the Circuit Court suspended its judgment pending the appeal and ordered the difference in the rates deposited in a bank under an additional $200,000.00 bond.

The Supreme Court of Missouri, on May 24, 1921, affirmed the Commission's decision and the decision of the Circuit Court with certain reservations as will appear from the Supreme Court's opinion hereinafter set forth. Thereupon the Southwestern Company duly filed its motion for a rehearing, which was overruled on August 1, 1921. On August 4, 1921, the Southwestern Company obtained a writ of error from this Court to the Missouri Supreme Court. The Supreme Court of Missouri has made an order continuing in effect the orders of the Circuit Court relating to the deposit of the excess rates pending the final determination of this writ of error by this Court.

Division II.

1. General:

There is no controversy as to the credibility of any of the
227 witnesses.

The Southwestern Company introduced testimony as to the original book cost as of June 30, 1919, of all of its property in the State of Missouri; as to the prorated or estimated book cost as of June 30, 1919 of each of its exchanges; of the reproduction cost new and the reproduction cost new less depreciation as of June 30, 1919, of all of its property in Missouri as a whole and separately in detail as to each of its exchanges; and revenues and expense statements covering the State of Missouri as a whole and each of its exchanges separately.

The contract which the Southwestern Company had with the United States Government covering the period of Federal operation is as follows:

228 Whereas, on the 4th day of October, 1918, the American Telephone and Telegraph Company, in behalf of itself and of each Constituent Company of the Bell System thereafter joining therein, made a proposal offering to accept a just compensation, defined in such proposal, for the supervision, possession, control and operation of the telephone system of the Bell System taken by the President of the United States under a joint resolution of the Senate and House of Representatives, dated July 16, 1918, which supervision, possession, control and operation commenced at twelve o'clock midnight on July 31, 1918; and

Whereas, by order of Honorable A. S. Burleson, Postmaster General, No. 2085, dated October 5, 1918, said proposal was accepted,

and it is in said order provided that compensation will be paid in accordance with the terms and provisions of said proposal; and,

Whereas, the Southwestern Bell Telephone Company did, in writing, on the 16th day of October, 1918, indicate to the Postmaster General its purpose to join in, and that it did join in, said proposal:

Now, therefore, this agreement made and entered into on this 15th day of January, 1919, by and between the American Telephone and Telegraph Cmopany, a corporation organized under the laws of the State of New York, hereinafter, for convenience, designated as the American Company, and the Southwestern Bell Telephone Company, a corporation organized under the laws of the State of Missouri, hereinafter, for convenience, designated as the Southwestern Bell Company, will witness:

229 Section 1. That a copy of said proposal is attached hereto and made a part hereof.

Sec. 2. That the annual amount which the Southwestern Bell Company is entitled to receive out of the compensation payable to the American Company, as provided by section 7 of said proposal, shall be determined as follows:

(*a*) It is agreed that as of August 1, 1918, the said annual amount to which the Southwestern Bell Company is so entitled is the sum of two million one hundred and fifty-six thousand six hundred and thirty-five dollars ($2,156,635) subject to corrections for errors in computation, if any.

(*b*) Taking the said sum of two million one hundred and fifty-six thousand six hundred and thirty-five dollars ($2,156,635) as a basis, there shall be made from time to time such adjustments, if any, as are necessary under items (3) and (4) of paragraph (*a*) of said section 7 on account of charges for interest or dividends and other costs of securing necessary additional capital, and on account of charges for interest and dividends upon new securities or share capital issued for the discharge, conversion or renewal of present obligations, including sinking fund obligations, and for additional interest and charges to secure extensions on existing securities, which adjustments shall be so made in conformity with such practices as shall be established from time to time by the American Company and the Postmaster General in making adjustments under said items (3) and (4).

Said adjusted amount is the portion of the compensation payable under said section 7, to which the Southwestern Bell Company is annually entitled. Said adjusted amount shall be payable
230 to the Southwestern Bell Company in monthly instalments, with interest upon delinquent installments at 5% per annum as provided in paragraph (*i*) of section 8 of said proposal.

The American Company agrees that it will exercise reasonable diligence in the collection of the amounts payable to it as provided by the said section 7, and that as and when the said amounts are

received by it the American Company will promptly pay to the Southwestern Bell Company the portions thereof to which the Southwestern Bell Company is entitled as above set out; provided, however, that the obligation of the American Company shall be limited to its obligation to pay over to the Southwestern Bell Company the latter Company's proportion of the amounts actually received by the American Company, without any obligation on the part of the American Company to make any payments either of principal or interest, except as it has first been paid by the representative of the United States.

Sec. 3. The American Company agrees that as and when any amounts on account of taxes, license fees and charges, or expenses of suits in respect thereof, paid in the first instance by the Southwestern Bell Company, are repaid by the Postmaster General to the American Company as provided by paragraph (*b*), section 5, of said proposal, it, the American Company, will promptly pay over to the Southwestern Bell Company such amounts paid by the Southwestern Bell Company in the first instance, and so repaid to the American Company by the Postmaster General, together with any interest thereon received from the Postmaster General.

Sec. 4. That the amount of working capital mentioned in
231 paragraph (*d*) of section 1 of the said proposal which at the end of Federal control is to be returned to the Southwestern Bell Company is the sum of four hundred and forty-eight thousand nine hundred and thirty-six and sixteen one-hundredth dollars ($448,936.16).

Sec. 5. That the Southwestern Bell Company's proportionate share of the reserve for accrued depreciation provided for under paragraph (*b*) of section 3 of said proposal shall be for each year, and at the same rate for each fraction of a year, the entire amount arising from the application of the 5.72% to the book value of its property as provided in said paragraph.

Sec. 6. Such adjustments if any, contemplated by paragraph (*c*) section 6 of said proposal, as may become necessary by reason of the expenditures of balances in the reserves for accrued depreciation, and the surplus, if any, of non-operating income without their restriction to the telephone systems of the particular Constituent Companies to which they belong shall be adjusted at the expiration of the period of Federal control. In making such adjustments no interest shall be charged on such balances prior to the expiration of the period of Federal control.

Sec. 7. That the American Company shall from time to time, as and when requested by the Southwestern Bell Company, make such inspections and examinations of the books and accounts of the Postmaster General relating to the property of the Southwestern Bell Company and the operation thereof as the Southwestern Bell Company may reasonably require, reporting to the Southwestern Bell Company the results of such examinations; and shall upon re-

quest furnish to the Southwestern Bell Company copies of
232 such operating reports and statistical data relating to the property of the Southwestern Bell Company and its operation as may be furnished to the American Company by the Postmaster General under the provisions of paragraph (*h*) of section 8 of said proposal.

Sec. 8. That the Southwestern Bell Company shall forthwith prepare and furnish to the American Company four copies of the inventory of its material and supplies on hand at midnight, July 31, 1918, which is required by paragraph (*b*) of section 1 of said proposal, which inventory shall be authenticated by the signature of the President or a Vice-President of the Southwestern Bell Company.

Sec. 9. That the Southwestern Bell Company will protect and save the American Company harmless from those obligations, assumed by the American Company under said proposal, which are primarily obligations of the Southwestern Bell Company arising out of or in connection with its telephone system, and especially from such obligations as to taxes, materials and labor, and repayments of amounts paid by the Postmaster General on account of the cost of additions to the property of the Southwestern Bell Company; and the Southwestern Bell Company further agrees to repay to the American Company, on demand, the amounts of any expenses which the American Company may incur, and of any payments which it may make because of, or arising out of, such obligations.

Sec. 10. That, as to such action as, by the terms of the said proposal, the American Company is required to take in behalf of the Southwestern Bell Company or as to matters affecting its telephone system, the American Company assumes and incurs no obligation to the Southwestern Bell Company, except the obligation to
233 exercise reasonable diligence and good faith; provided, however that the American Company will not act in any matter requiring the exercise of discretion, and involving the Southwestern Bell Company or its property, without first affording to the Southwestern Bell Company an opportunity for a full and frank conference with reference to such action.

In witness whereof, the American Telephone and Telegraph Company and the Southwestern Bell Telephone Company have caused this instrument to be executed in duplicate by their officers thereunto duly authorized.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY,

(Signed) H. B. THAYER,
Vice-President.

SOUTHWESTERN BELL TELEPHONE CO.,

(Signed) H. J. PETTENGILL,
President.

Order No. 2085.

Post Office Department,

Washington.

October 5, 1918.

The proposal of the American Telephone and Telegraph Company, dated October 4, 1918, in behalf of itself and of the Constituent Companies comprising the Bell System, with respect to just compensation for the use of the properties owned by it and the other companies comprising the Bell System during the period of Federal control provided for in the Joint Resolution of Congress approved July 16, 1918, and the Proclamation of the President with respect thereto dated July 22, 1918, and the Order of the Postmaster
234 General assuming supervision, possession, control and operation of these and other telephone and telegraph properties, dated August 1, 1918, is hereby accepted on behalf of the United States, and compensation will be paid in accordance with the terms and provisions thereof.

By direction of the President.

(Signed) A. S. BURLESON,
Postmaster General.

After extended conferences with the Postmaster General, which included, in order to prevent any possible misunderstandings, a frank exchange of views and painstaking and exhaustive discussions of all phases of the questions presented, the American Telephone and Telegraph Company, in behalf of itself and of each Constituent Company of the Bell System, which shall within twenty-five (25) days hereafter (subject to extensions of such time in any case by the Postmaster General) in writing indicate to the Postmaster General its purpose to join in this proposal, offers to accept a just compensation for the supervision, possession, control and operation of the telephone system of the Bell System taken by the President of the United States under a joint resolution of the Senate and House of Representatives, dated July 16, 1918, which supervision possession, control and operation commenced at twelve (12) o'clock midnight on the 31st day of July, 1918, and is referred to as Federal control to be fixed as follows:

Section 1. The Bell System's telephone system, of which the President has taken such supervision, possession, control and operation includes

(*a*) All of the telephone property operated by the Bell
235 System as parts of its telephone system, whether owned or leased, and all additions, including those through consolidations and purchases, made thereto during the period of Federal control, except that each of the Constituent Companies reserves to itself the right to use during Federal control such portions of office buildings owned by it and now occupied in the operation of its

telephone system as may be reasonably necessary to provide accommodations for its corporate organization, and such use of the Federal Telephone System, on such terms to the corporate officials, as the Postmaster General may prescribe.

(*b*) All materials and supplies on hand at midnight July 31, 1918. As soon as practicable a separate inventory of said material and supplies received from each Constituent Company shall be made and authenticated for him by the signatures of such person or persons as the Postmaster General may designate for that purpose, and for the Bell System by the signature of the President or a Vice-President of the American Company, which inventory when so authenticated shall constitute a part of this proposal.

(*c*) The net balance as of midnight July 31, 1918, in the accounts of each Constituent Company which are designated in accounting circular No. 8 of the American Company as follows: (1) number 115, Employees' Working Funds, (2) number 118, Due from Subscribers and Agents, (3) Subdivisions 02 to 08, both inclusive, number 119, Accounts Receivable from System, (4) number 120, Miscellaneous Accounts Receivable, and (5) number 123, Other Current Assets.

(*d*) Eleven million nine hundred and seventy-two thousand and seven hundred and nine and 94/100 ($11,972,709.94) dollars in cash for working capital, the use of which the Postmaster
236 General is to have during the period of Federal control without interest, which amount is the amount of working capital which the Long Lines Department of the American Company and the Constituent Companies other than the American Company had on hand August 1, 1918. If this proposition is accepted the Bell System will within thirty days thereafter notify the Postmaster General in writing of the amount of such working capital to be returned to each Constituent Company at the end of Federal control.

Section 2. During the period of Federal control, the operation of the property of the Bell System shall be continued at a standard of efficiency relatively equal to that of the past.

Section 3. (*a*) During the period of Federal control, through current repairs and maintenance the property of the Bell System shall be maintained by the Postmaster General up to a standard relatively equal to that prior to July 31, 1918, so that its state of repair and operating condition will be relatively the same at the expiration of the period of Federal control as at its beginning.

(*b*) In order to make the provision for depreciation and obsolescence relatively equal to that of the past, during the period of Federal control the Postmaster General shall set aside an amount in each year (and at the same rate for each fraction of a year) equal to 5.72% of the book value for the year in question of the property described in paragraph (*a*) of section 1 hereof, which book value shall include the book value of the Long Lines plant of the American

Company and the cost of each addition to the property of the Bell System during the period of Federal control, including ad-
237 ditions made through consolidations and purchases, but shall not include intangible capital, right of way or land.

The Postmaster General shall further make provision for the amortization of intangible capital, right of way and land, including additions to these accounts because of additions as aforesaid to the property during the period of Federal control, upon a basis substantially equal to the established practice of the Bell System prior to Federal control.

The amounts so set aside shall be credited in monthly installments to be fixed in accordance with the present established practice of the Bell System, and its proportionate share thereof shall be so credited to each Constituent Company for credit to its reserve for accrued depreciation or reserve for amortization of intangible capital, as the case may be. The charges to these accounts shall be made according to the rules of the Commission governing the accounts of telephone companies, and any balance remaining in either of these accounts after such charges shall be invested in plant of the Bell System.

(*c*) Each Constituent Company shall have the right to inspect its property at all reasonable times during the period of Federal control and the Postmaster General shall provide reasonable opportunities for such inspection, but such inspection shall not interfere with the operation of the property.

Section 4. (*a*) The American Company will continue to perform for the telephone properties of all the licensee companies of the Bell System the duties hitherto required of it under the license agre-ments, a specimen of which is hereto attached, which duties may be stated generally as follows:

238 To furnish for their use telephone transmitters and receivers and to maintain the same by repairs and renewals;

To license the use of inventions, call bells, switches, switchboards and other telephone devices, operating methods and system needed for telephone lines;

To grant the use of the American Company's rights-of-way and franchises for the maintenance of lines, so far as this may legally be done;

To furnish facilities for long distance communication over the toll lines and to the exchanges comprising the Bell System throughout the United States;

To afford to the Bell System the right to use all the telephonic devices, operating methods and systems covered by patent rights now or hereafter held by ownership or license;

To continuously prosecute the fundamental work of research, investigation and experimentation in the development of the art and science of telephony and in the development of plans, methods, system and ideas designed to promote safety, economy and efficiency in equipment, construction and operation;

To furnish advice and assistance in general engineering, plant, traffic, operating, commercial, accounting, patent, legal and other matters pertaining to the efficient economical and successful conduct of the telephone business;

To furnish advice and assistance in any financing, in the securing of funds on fair terms, needed for new construction or other expenditures;

To afford to each Constituent Company, the right, for the betterment of the service, to extend to connecting companies the benefit of such engineering and other technical advice and in-
239 formation in respect to the construction, maintenance, repair and operation of telephone plant;

To maintain continuously an organization of specialists trained in various branches of the work required to be done in rendering the foregoing services, of such numbers and possessed of such technical knowledge and experience as will enable the work to be so done as to relieve the individual companies from the necessity of attempting to perform said work for themselves.

(*b*) In addition thereto the American Company will grant to the Postmaster General, during the period of Federal control of the telephone systems, the right to employ and use in the operation of telephone, telegraph, radio or cable systems any patented invention, discovery, contrivance or device heretofore or hereafter developed, owned or controlled by the American Company or any of its Constituent Companies or by the Western Electric Company, Incorporated, a New York corporation; and will, upon request of the Postmaster General, through its scientific, technical and engineering departments, undertake to make such experiments, studies and researches in the science of communication by electricity pertaining to the operation of such systems as the Postmaster General may direct, and will give such advice and assistance as he may require; provided, however, that the Postmaster General, during the period of Federal control or subsequent thereto, shall not have the right to manufacture or license manufacturers under such patents; provided, further, that the rights as to patents proposed in this section shall not
240 extend beyond the period of Federal control, nor shall the use of patented devices owned by individuals or companies other than Constituent Companies, during the period of Federal control, be construed to confer any right upon Constituent Companies to use or to control the use of such devices subsequent to the termination of Federal control; nor shall the use during the period of Federal control of patented devices covered by patents of the Bell System on property other than that of Constituent Companies be construed to confer the right to continue such use after the expiration of such period.

In consideration of the foregoing duties, the four and one-half per cent (4½%) payments heretofore made by the Constituent Companies to the American Company under said license agreements shall be continued and during the period of Federal control shall be made by the Postmaster General to the American Company according to the established practice of the Bell System under said license agree-

ments, and the money shall be expended by the American Company in similar manner as heretofore and for the same general purposes. The Long Lines Department of the American Company shall be treated as a licensee company as heretofore.

For any services rendered by the American Company to the Postmaster General in the extension or improvement of any properties other than those owned by the American Company or its Constituent Companies, compensation will be agreed upon.

Any balance of the fund created by the payments under this section to the American Company which shall remain unexpended shall be invested from time to time in extensions and improve-
241 ments of the properties of the American Company without charge to the Government for interest as provided in Section 6, paragraph (*a*), item 2 hereof.

Sec. 5 (*a*). During the period of Federal control the Bell System's Plan for Employees' Pensions, Disability Benefits and Death Benefits shall be continued, except as modified by mutual agreements of the American Company and the Postmaster General. The Postmaster General shall pay all installments of pensions granted prior to August 1, 1918, and becoming due during the period of Federal control, and all payments becoming due during the period of Federal control to employees taken over by the Postmaster General on account of pensions, disability benefits and death benefits; provided, however, that pensions granted to former employees who were employees of the general department of the American Company when their pensions were granted, shall not be paid by the Postmaster General.

(*b*) The Bell System shall, before they become delinquent, pay all taxes, license fees and charges, and the expense of suits in respect thereof, which can or may be lawfully imposed during the period of Federal control by Federal or other governmental authority upon any part of the property described in paragraph (*a*) of Section 1 hereof, and also such other taxes, license fees and charges as during the period of Federal control become the obligations of the companies owning or operating such property.

The American Company shall render bills to the Postmaster General for such taxes, license fees and charges as the same are paid, which bills shall be accompanied by receipts of the proper tax
242 collecting officials, and shall be paid by the Postmaster General within 5 days after their rendition, except that said bills shall not include, and the Postmaster General shall not pay to the American Company, the portion of such taxes, license fees and charges properly apportionable to property not taken under Federal control and to the revenue from said last mentioned property. For the purpose of apportioning such taxes, license fees and charges, stock, obligations or other securities held by any Constituent Company representing investments in the property described in paragraph (*a*) of section 1 hereof shall be treated as property taken under Federal control.

If any such tax, license fee or charge is for a period which began before July 31, 1918, or continues beyond the period of Federal con-

trol, such portion of such tax, license fee or charge as may be apportionable to the period of Federal control shall be paid by the Postmaster General and the remainder shall be paid by the proper Constituent Company.

Whenever a period for which a tax, license fee or charge is imposed cannot be definitely determined, so much of such charge as is payable in any calendar year shall be treated as imposed for such year.

(*c*) During the period of Federal control, the Postmaster General shall pay all rentals for property used in the operation of the property of the Bell System.

(*d*) Said taxes and rentals shall be allocated between the expenses of operation and capital accounts in accordance with the accounting rules prescribed by the Commission.

(*e*) The Postmaster General shall afford to the American Company without charge therefor the use of telephone and tele-
243 graph plant in his possession for experimental and testing purposes, with such services of his employees as may be involved in such use; provided, however, that this shall be done without interference with the efficiency of the service rendered by the Postmaster General.

Sec. 6 (*a*). Such additions to the telephone property of the Bell System as may be desired by the Postmaster General, and approved by the American Company, as necessary in order to reasonably provide for the public requirements, giving priority to such requirements for purposes directly relating to the prosecution of the war (including in the word additions those made by consolidations and purchases), shall be made, item (1), by investing the proceeds of the $48,367,200 of the American Company's Seven Year Six Per Cent Convertible Gold Bonds dated August 1, 1918, due August 1, 1925, referred to in paragraph (*a*) of section 7 hereof, and the unexpended balance of the reserves for accrued depreciation of the Constituent Companies in additions to their telephone systems; and after said funds have been exhausted, item (2), by investing any available surplus remaining from the non-operating income of the Constituent Companies (but not arising out of any revenue derived from money paid by the Postmaster General under section 7 hereof) after the payment of interest and dividends; and after such surplus, if any, has been exhausted, item (3), by investing the proceeds of the issue and sale of securities if such securities can be sold at a reasonable price; provided, however, that the Bell System shall not be bound to expend for such additions from money provided by the issue of new securities more than four times the sum of the amount con-
244 tributed by the Bell System to their cost through item (2) above plus the amounts contributed to their cost by the Postmaster General. The title to each such addition shall immediately vest in the proper Constituent Company.

(*b*) Any amounts which the Postmaster General may so contribute to the cost of such additions shall be repaid to him by the American Company in twenty (20) equal annual installments, payable one at the expiration of one year after Federal control and one at the end of each year thereafter until all are paid, with interest from the date of the end of Federal control at the rate of 5 per cent. per annum payable annually upon all unpaid balances; provided that if any Constituent Company shall part with the title to its telephone system under such conditions that its telephone system shall cease to be a part of the Bell System, then and in that event all such installments owing on account of such additions to the property of said Constituent Company and then unpaid shall become due and payable.

(*c*) In the expenditure of the balances in the reserves for accrued depreciation and the surplus, if any, of non-operating income for additions as provided in paragraph (*a*) of this section, the use of such balances and surplus shall not be restricted to the telephone systems of the particular Constituent Companies to which they belong, but may be for such additions to any part of the Bell System; and the several Constituent Companies will make between themselves the arrangements and adjustments involved in such treatemnt of said balances and surplus.

(*d*) The character, plan and design of such additions shall
245 be approved by the Postmaster General and the American Company. The Postmaster General shall render to the American Company on the 15th day of each month accurate statements of the cost of all material and labor furnished by him for account of each Constituent Company for such construction during the preceding month, which statements shall be based upon and in accordance with the accounting rules and classifications prescribed for the Bell System by the Commission and in force July 31, 1918, as from time to time amended. Upon such accounts there shall be credited any amounts then due and unpaid from the Postmaster General on account of the reserves provided for in paragraph (*b*) section 3 and the balance remaining shall be paid to the Postmaster General on or before the 15th day of the succeeding month.

(*e*) The Bell System shall not be required in the first instance to furnish funds for such additions not approved by the American Company. At the end of Federal control, the value of each addition not approved by the American Company, for the future use of the Constituent Company of whose system it forms a part, shall be appraised by the Commission and at the end of Federal control, but not prior thereto, the title to each of such additions shall pass to the proper Constituent Company and the amount so determined to be its value shall be paid to the Postmaster General by said proper Constituent Company in twenty (20) equal annual installments, payable one at the expiration of one year after Federal control, and one at the end of each year thereafter until all are paid, with interest from the date of the end of Federal control at the rate of 5 per

cent per annum, payable annually upon all unpaid balances;
246 provided, that if any Constituent Company shall part with the title to its telephone system under such conditions that its telephone system shall cease to be a part of the Bell System, then and in that event, all such installments owing by such Constituent Company and then unpaid shall become due and payable.

Sec. 7 (*a*). The Postmaster General shall pay to the American Company for each year, and pro rata for each fractional part of a year during the period of Federal control, an amount equal to the sum of the following four items: item (1) the annual interest and existing amortization charges on all outstanding securities or obligations of the Bell System in the hands of the public, including $48,367,200 of the American Company's Seven Year Six Per Cent Convertible Gold Bonds, dated August 1, 1918, due August 1, 1925; item (2) dividends for the period of one year upon the share capital of the Bell System outstanding July 31, 1918, in the hands of the public, at the average rate of regular dividends paid thereon during the three years ending December 31, 1917, which items (1) and (2) aggregate sixty-five million one hundred forty-eight thousand six hundred and forty-one dollars ($65,148,641), subject to corrections for errors in computations, if any; item (3) the annual charge for interest and dividends and other costs of securing necessary additional capital for such expenditures as may be made at the request of the Postmaster General, and item (4) the annual charge for such interest and dividends as the Bell System may be required to pay on new securities or share capital issued for the discharge, conversion or renewal of present obligations, including sinking fund ob-
247 ligations, and for additional interest and charges to secure extensions on existing securities.

(*b*) The said compensation shall be paid to the American Company in monthly installments on the last day of each calendar month during the period of Federal control, except that installments which have accrued prior to the acceptance of this proposal shall be payable at the date of such acceptance; such payments to the American Company to operate to fully satisfy and discharge all claims of the Constituent Companies and each of them on account of the amounts so paid.

If any Constituent Company shall fail to join in this proposal, as provided by section 12 hereof, the following deductions shall be made from the above mentioned items (1) and (2):

(1) There shall be deducted an amount equal to the annual interest and existing amortization charges, on all outstanding securities or obligations of such non-joining Constituent Company; and

(2) There shall be deducted an amount equal to dividends for the period of one (1) year, at the average rate paid during the three (3) years ending December 31, 1917, upon the share capital of such non-joining Constituent Company outstanding on July 31, 1918.

Sec. 8. (*a*) All amounts received by the Postmaster General under paragraph (*c*) of section 1 hereof, and all other amounts, whether received from the Bell System in cash or collected or realized by him from current operating assets, belonging to the Bell System or arising from telephone operations prior to midnight of July 31, 1918, shall be credited by him to the proper Constituent Company;
248 and the Postmaster General shall, to the extent of the cash so received or realized, pay and charge to each Constituent Company all expenses arising out of its telephone operation prior to August 1, 1918, and unless objected to by such company may pay and charge to such company any of such expenses in excess of the cash so received or realized. Balances of the above accounts shall be struck monthly on the last day of August, 1918, and on the last day of each calendar month thereafter, and the cash balance found on such adjustments to be due either party shall be then payable.

(*b*) Telephone operating expenses and rent deductions shall be allocated with reference to the time when incurred as between the periods prior and subsequent to midnight of July 31, 1918, and between the period of Federal control and the period subsequent thereto, in each instance in accordance with the present established accrual practices of the Bell System; telephone operating revenues and rent revenues shall be allocated as between the periods prior and subsequent to midnight of July 31, 1918, and as between the period of Federal control and the period subsequent thereto, in each instance in accordance with the present established accrual practices of the Bell System.

(*c*) Items included in accounts (1) number 129 Prepaid Rents, (2) number 130 Prepaid Taxes, (3) number 131 Prepaid Insurance, (4) number 132 Prepaid Directory Expense, and (5) number 133 Other Payments, which are sub-accounts of account number 128, as said accounts are described in Accounting Circular Number 8 of the American Company, shall be allocated as between the periods prior and subsequent to midnight of July 31, 1918, and as between
249 the period of Federal control and the period subsequent thereto, in each instance in accordance with the present established practices of the Bell System.

(*d*) There may be used for additions to the Bell System property, approved by the Postmaster General, any of the materials and supplies taken over under paragraph (*b*) of section 1 hereof, or purchased by him and held for use in connection with such property, insofar as in his judgment this may be done with due regard to his own requirements. Materials and supplies so furnished shall be charged to the proper Constituent Company at inventory prices in the case of those taken over and at cost in the case of those purchased.

(*e*) The Postmaster General shall pay, or save each Constituent Company harmless from, all expenses incident to or growing out of the possession, operation and use of the property taken over during the period of Federal control. He shall also pay or save each such company harmless from all judgments or decrees that may be re-

covered or issued against, and all fines and penalties that may be imposed upon it by reason of any cause of action arising out of Federal control or of any thing done or omitted in the possession, operation, use or control of its property during the period of Federal control, except judgments or decrees founded on obligations of such company to the Postmaster General or the United States.

(*f*) The Postmaster General shall save each Constituent Company harmless from any and all liability, loss or expense resulting from or incident to any claim made against it growing out of anything done or omitted during the period of Federal control
250 in connection with or incident to operation or existing contracts relating to operations, and shall do and perform so far as is requisite during the period of Federal control for the protection of such Company all and singular the things, of which he may have notice, necessary and appropriate to prevent, because of Federal control or by reason of anything done or omitted thereunder, the forfeiture or loss by such Company of any of its property rights, ordinance rights, or franchises, or of its connecting or other contracts involving a facility of operation. The Postmaster General shall also save each Constituent Company harmless from any and all claims for breach of covenant heretofore entered into by it or by any predecessor in title or interest in any mortgage or other instrument in respect of insurance against losses by fire.

Nothing in this or in the preceding paragraph shall be construed to be an assumption by the Postmaster General of, or to make him liable on, any obligation of any such Company to pay a debt secured by a mortgage.

(*g*) In carrying out the provisions of paragraph- (*a*), (*b*) and (*c*) of this section, the Postmaster General shall not settle any claim by or against any Constituent Company against the objection in writing of the president or any other duly authorized officer of such Company. The conduct of all litigation arising out of such disputed claims or out of operation prior to Federal control shall be in charge of the Bell System's legal force and the expense thereof shall be paid by the Bell System; but the Postmaster General shall render to the Bell System all reasonable assistance in the conduct of such litigation.

251 All controversies and litigations arising out or or affecting patent rights of the Bell System and the Western Electric Company, Incorparated, shall be conducted by the American Company at its expense.

(*h*) The American Company shall have the right at all reasonable times to inspect the books and accounts kept by the Postmaster General relating to the property of the Bell System or to the operation thereof, and the Postmaster General shall during the period of Federal control furnish to it periodically copies of operating reports relating to the property of the Bell System and as soon as practicable after the end of each fiscal year, the statistical data for such year substantially as heretofore compiled.

(*i*) All payments to be made under this proposal which are not paid within five days after due shall draw interest from the date of their maturity until paid at the rate of five per cent (5%) per annum.

Section 9. (*a*) At the end of the period of Federal control all the property described in paragraph (*a*) of section 1 hereof, and also all additions (including those by consolidations and purchases) to the property of the Bell System made during the period of Federal control out of surplus income of the Bell System out of its unexpended reserves, out of the proceeds of securities, or otherwise, together with all repairs, renewals and replacements thereof, shall be returned to the respective Constituent Companies in a state of repair and in an operating condition equivalent to that of the Bell System's telephone system on July 31, 1918.

252 (*b*) At the end of the period of Federal control the Postmaster General shall return to each Constituent Company an equal quantity and quality of materials, and supplies of equal relative usefulness to that of the materials and supplies which he received, and to the extent that the Postmaster General does not return such materials and supplies he shall account to said Company for the same at prices prevailing at the end of the period of Federal control. To the extent that any Constituent Company may then receive materials and supplies in excess of those delivered by it to the Postmaster General, it shall account for the same at the prices prevailing at the end of the period of Federal control, and the balance shall be adjusted in cash.

Section 10. (*a*) At the end of the period of Federal control there shall be paid to each Constituent Company an amount of money equal to the cash working capital without interest received by the Postmaster General from it, and also an amount equal to any other cash and special deposits received by him from such company at the beginning of the period of Federal control and not theretofore accounted for by him, together with any unpaid interest which may have accrued upon the said other cash and deposits under this proposal. There shall be paid to the proper Constituent Company any funds created under the provisions of this agreement except to the extent that such funds may have been properly used under this proposal.

Section 11. In this proposal, the words "Postmaster General" are used to designate Albert S. Burleson, or such other person as the President may from time to time appoint to exercise the powers conferred on him by law with reference to Federal control; the
253 word "Commission" is used to designate the Interstate Commerce Commission; the words "American Company" are used to designate the American Telephone and Telegraph Company; and the words "Constituent Company" are used to designate each of the companies named in the attached list of Constituent Companies; the words "Bell System" are used to designate collectively the Constituent Companies now or hereafter joining in this

proposal; and the word "addition" as used herein, shall be understood to mean additions, betterments or replacements as defined by the Commission's system of accounts (including extensions and improvements made through consolidations and purchases), the net cost of which under such system of accounts is properly chargeable to fixed capital, that is to say, account number 100, Fixed Capital Installed Prior to January 1st, 1913; number 101, Fixed Capital Installed Since December 31, 1912, and number 104, Construction Work in Progress.

Section 12. This proposal is the proposal of the American Company and of those Constituent Companies, which, within twenty-five days hereafter, in writing indicate to the Postmaster General their purpose to join in it. If accepted it shall be effective on and from August 1, 1918.

Dated this 4th day of October, 1918.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY,
By THEO. N. VAIL,
President.

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Name of company.	Incorporated under the laws of
American Telephone and Telegraph Company	New York
New York Telephone Company	New York and New Jersey
The Delaware and Atlantic Telegraph and Telephone Company	New Jersey
The Bell Telephone Company of Pennsylvania	Pennsylvania
The Chesapeake and Potomac Telephone Company	New York
The Diamond State Telephone Company	Delaware
The Chesapeake and Potomac Telephone Company of Baltimore City	Maryland
The Chesapeake and Potomac Telephone Company of Virginia	Virginia
The Chesapeake and Potomac Telephone Company of West Virginia	West Virginia
The Cleveland Telephone Company	Ohio
Michigan State Telephone Company	Michigan
Wisconsin Telephone Company	Wisconsin
Southern Bell Telephone and Telegraph Company	New York
Cumberland Telephone & Telegraph Company, Incorporated	Kentucky
Southern Bell Telephone and Telegraph Company of Kentucky, Incorporated	Kentucky
Southern Telephone Company of Indiana	Indiana
The Northwestern Telephone Exchange Company	Minnesota
Nebraska Telephone Company	Nebraska

Name of company.	Incorporated under the laws of
Iowa Telephone Company	Iowa
Southwestern Bell Telephone Company	Missouri
Southwestern Bell Telephone Company	Illinois
Southwestern Bell Telephone Company	Oklahoma
The Southwestern Telegraph and Telephone Company	New York
New England Telephone and Telegraph Company	New York
The New England Telephone and Telegraph Company of Massachusetts	Massachusetts
Providence Telephone Company	Rhode Island
Providence Telephone Company of Massachusetts.	Massachusetts
The Southern Massachusetts Telephone Company.	Massachusetts
Chicago Telephone Company	Illinois
The Mountain States Telephone & Telegraph Company	Colorado
The Tri State Telephone Company	Colorado

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The Pacific Telephone and Telegraph Company.	California
Southern California Telephone Company	California
The Home Telephone and Telegraph Company of Spokane	Washington
Bell Telephone Company of Nevada	Nevada
The Southern New England Telephone Company	Connecticut
The Cincinnati and Suburban Bell Telephone Company	Ohio
Central Union Telephone Company, Messrs. David R. Forgan, Edgar S. Bloom and Frank F. Fowle, Receivers	Illinois
American Telephone and Telegraph Company of Alabama	Alabama
American Telephone and Telegraph Company of Arkansas	Arkansas
The Colorado and Eastern Telephone and Telegraph Company	Colorado
American Telephone and Telegraph Company of Delaware	Delaware
American Telephone and Telegraph Company of Georgia	Georgia
The American Telephone and Telegraph Company of Illinois	Illinois
American Telephone and Telegraph Company of Indiana	Indiana
American Telephone and Telegraph Company of Iowa	Iowa
The Kansas Telephone and Telegraph Company.	Kansas

Name of company.	Incorporated under the laws of
American Telephone and Telegraph Company of Kentucky	Kentucky
American Telephone and Telegraph Company of Louisiana	Louisiana
American Telephone and Telegraph Company of Baltimore City	Maryland
American Telephone and Telegraph Company of Massachusetts	Massachusetts
American Telephone and Telegraph Company of Michigan	Michigan
American Telephone and Telegraph Company of Minnesota	Minnesota

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American Telephone and Telegraph Company of Mississippi	Mississippi
American Telephone and Telegraph Company of Missouri	Missouri
American Telephone and Telegraph Company of Nebraska	Nebraska
American Telephone and Telegraph Company of New Jersey	New Jersey
American Telephone and Telegraph Company of North Carolina	North Carolina
The Ohio Telephone and Telegraph Company	Ohio
American Telephone and Telegraph Company of the Indian Territory	Indian Territory
The American Telegraph and Telephone Company of Pennsylvania	Pennsylvania
East Pittsburgh Telephone Company	Pennsylvania
American Telephone and Telegraph Company of Rhode Island	Rhode Island
Columbian Telephone and Telegraph Company of Rhode Island	Rhode Island
American Telephone and Telegraph Company of South Carolina	South Carolina
American Telephone and Telegraph Company of Tennessee	Tennessee
American Telephone and Telegraph Company of Virginia	Virginia
American Telephone and Telegraph Company of West Virginia	West Virginia
The American Telephone and Telegraph Company of Wisconsin	Wisconsin
American Telephone and Telegraph Company of Wyoming	Wyoming

257 *Agreement Between American Telephone and Telegraph Company and the Southern New England Telephone Company.*

Covering Telephones, Services, Licenses, and Privileges.

Memorandum, dated this — day of ——, 19—, stating and reaffirming the contractual relations now and heretofore existing between the parties hereto in connection with the furnishing of telephones and licensing their use, and the licensing of telephonic appar-tus suitable for use in connection therewith, and the furnishing of various services and privileges, by the American Telephone and Telegraph Company, a corporation organized under the laws of the State of New York, hereinafter called the "Licensor," to The Southern New England Telephone Company, a corporation organized under the laws of the State of Connecticut, hereinafter called the "Licensee."

Whereas, the Licensee is now and heretofore has been conducting a telephone business within the territory hereinafter defined, as a part of the Bell System, under certain license contracts in Forms 109 D, for Exchanges, 113 D, for Extra-Territorial Connecting Lines, and 116 C, for the Supply of Telephones for Private Lines and Other Purposes, respectively dated May 1, 1884, April 16, 1885, and May 1, 1884, from The American Bell Telephone Company, a corporation organized under the laws of the Commonwealth of Massachusetts, as the owner of Letters Patent of the United States granted to Alexander Graham Bell March 7, 1876, and January 30,
258 1877, numbered 174,465 and 186,787, respectively, and as the owner of, or as having the right to use, sundry other inventions which then were or might thereafter be embodied in electric speaking telephones, said license contracts also covering other such inventions which said The American Bell Telephone Company might thereafter own or have the right to use; and,

Whereas, the Licensor, as the successor in interest of said The American Bell Telephone Company in and to said license contracts, has assumed and is now and heretofore has been continuously discharging all of the obligations of said The American Bell Telephone Company under said license contracts; and,

Whereas, by mutual agreement of the parties thereto said license contracts have heretofore been modified in various respects, as shown by letters, by written agreements and by the practice of the parties evidenced by a continued course of dealings between them; and,

Whereas, the Licensor and the Licensee now desire for purposes of convenience to state in one instrument and reaffirm the contractual relations that now exist and have heretofore existed between them in respect to said matters;

Now, therefore, this instrument witnesseth that said contractual relations have heretofore been and now are as follows:

1. It is understood that the Licensor and the Licensee, respectively, have succeeded to all the rights and liabilities of the parties to said license contracts.

2. For the purposes of this memorandum:

(*a*) The word "telephone" means either a magneto telephone or a battery transmitter with induction coil.

(*b*) An "exchange" means a system in which different
259 stations on the same or different circuits, and either within any city, town, borough or village, or within a radius of fifteen miles of a central office, are connected with such central office or branch offices, for the purpose of placing subscribers or other parties by such circuits in communication with such central or branch offices, or with each other, either directly or through the agents of the system.

(*c*) An "extra-territorial connecting line" means a line connecting an exchange, as hereinbefore defined, with points without the territory of such exchange and within the territory of the Licensee in order to establish telephonic communication between the patrons of such exchange and parties at such points reached by said line.

(*d*) A "private line" means a line consisting of only a single circuit both ends of which are located wholly within the territory of the Licensee, which shall not be permanently or temporarily connected with any other circuit, and the telephones on which shall be used only for the individual and private business of the patron and only by him or his employees, and upon which no business shall be transacted for any consideration or toll to be paid by other persons than the patron or other parties named in the lease of telephones, and over which shall be transmitted no messages in respect of which, or of the transmission, collection or delivery of which, any consideration or toll is to be paid by any other person. But no one of the stations of a private line or of the lines of private intercommunicating systems shall be used as an exchange office, or be permanently or temporarily connected with a telephonic exchange system.

260 (*e*) A "private intercommunicating system" means an arrangement of equipment consisting of a switchboard or equivalent apparatus with operating telephone and telephone stations connected thereto, providing for telephonic intercommunication between the stations and having no connection with a telephonic exchange system. In other respects, the use is limited as above stated for private lines.

3. The Licensor, at the warehouse of the Western Electric Company, Incorporated, most convenient to the territory of the Licensee and from which the last named company delivers to the Licensee telephonic apparatus, will deliver to the Licensee, as needed, telephones made and to be used under the Licensor's patents, as herein set forth and permitted; the Licensor to keep continuously in stock

a sufficient number of telephones to insure prompt deliveries. All telephones delivered to the Licensee shall be deemed to be furnished hereunder unless otherwise specially designated by the Licensor. They will be of such character and pattern and bear such marks as the Licensor shall from time to time determine, but the Licensee may choose from among such standard patterns. Each of said telephones shall remain the property of the Licensor, and is leased, and the use of each licensed, under all patents under which the Licensor has or may have the right to license, so far as applicable thereto, for the purposes herein declared. The Licensee has the right to use said telephones and to grant such right of use to its patrons or to other parties in its territory, as hereinafter provided, for the purposes and to the extent herein limited, upon condition that and so long as the payments hereunder shall be duly paid to the Licensor
261 and the provisions hereof are not violated, but not longer or otherwise, (1) upon circuits exclusively composed of the lines of any of its exchanges; (2) upon extra-territorial connecting lines whether furnished in whole or in part by or for the Licensee; (3) in connection with the trunk lines reserved to the Licensor by Article 5; (4) with the approval of the Licensor, upon the telephone systems of other parties for use in the territory of the Licensee under and in accordance with its regular sub-licensee or connecting agreements with such parties; (5) in connection with other telephones, not furnished or licensed by the Licensor, which are used on farmers' lines, so-called, or lines of a similar character, on lines operated by railroads, and on lines and exchanges operated by sub-licensee or connecting companies and wholly located in the territory of the Licensee and not connected with the lines and exchanges in the territory of any other licensee of the Licensor; provided that all such other telephones shall be of such a type, and the lines upon which they are used shall be maintained and operated at such a standard of efficiency, as will not in the judgment of the Licensor unduly impair the quality of the service furnished over the joint lines of such users and the Licensee; (6) upon private lines and lines of private intercommunicating systems.

The Licensee shall not directly or indirectly connect with the trunk lines reserved to the Licensor by Article 5 any line or telephhone exchange, except lines or exchanges which it has been specially authorized by the Licensor to connect with said trunk lines.

All rights not specifically granted to the Licensee remain to the Licensor.

262 The Licensor will not furnish or license any telephones to be used by others upon an exchange within the territory of the Licensee while its rights hereunder exist, except telephones to be used on the lines of exchanges having their central offices outside the territory of the Licensee by persons within said territory who are or may be subscribers to or patrons of such exchanges; nor will the Licensor furnish or license any such telephones to be used by others upon extraterritorial connecting lines while the rights of the Licensee hereunder exist; provided, however, that the Licensee shall furnish or cause to be furnished exchanges and lines sufficient to satisfy all

reasonable demands of the public for exchange and toll line service within said territory and shall furnish such service at rates that are just and reasonable.

This article shall not be so construed as to prevent the Licensor in its discretion from authorizing the Western Electric Company, Incorporated, or its successors and assigns, to sell telephone receivers and transmitters of any type in the open market to all buyers.

4. The Licensor will license the use of the inventions in call-bells, switches, switchboards, and other telephonic devices, apparatus, methods and systems needed for the telephone lines of the Licensee, which it can so license, upon the same terms for the Licensee as for others under similar circumstances; but such call-bells, switches, switchboards and other telephonic devices, apparatus, methods and systems shall not be disposed of by the Licensee without the consent of the Licensor except to those so licensed by the Licensor to use them or to the licensed manufacturers of the Licensor.

263 5. The Licensee may enjoy any of the Licensor's rights of way and similar franchises of the Licensor to maintain its lines, which the Licensor can permit it to use, when and so long as, in the judgment of the Licensor, it shall not interfere with the enjoyment thereof by the Licensor or its other Licensees, and shall pay whatever may be due to third persons, if anything, growing out of a in connection with such use by it, and may, to the extent and under the conditions aforesaid, use the Licensor's overhead and underground facilities for supporting or carrying wires (both open and in cable) upon paying a pro rata share of the cost of constructing and maintaining them or such other reasonable compensation as may be agreed upon. For trunk lines from the several exchange offices to points outside of the respective exchanges, the Licensor may, without further compensation, enjoy all rights of the Licensee to construct and maintain lines which the Licensee can permit it to use, when and so long as, in the judgment of the Licensee, it shall not interfere with the enjoyment thereof by the Licensee, and may, to the extent and under the conditions aforesaid use the Licensee's overhead and underground facilities for supporting, or carrying the Licensor's wires (both open and in cable) upon paying a pro rata share of the cost of constructing and maintaining them or such other reasonable compensation as may be agreed upon. The Licensor reserves the right to use telephones on lines passing over the routes or any or either of them of the lines of the Licensee, and connecting, with each other or with said exchanges, places with which the Licensee is not authorized to connect, for the purpose of establishing personal communication or transmitting messages between
264 such places and between such places and said exchanges. The Licensee will also allow the Licensor to connect the wires of any such lines with its said lines in order to constitute thereby a through line, of which the Licensee's lines or any or either of them or any part of either of them can form a portion or link, in order to forward through communications or messages; will make or permit to be made convenient switchboard or other connections, for that

purpose, and as compensation for such use of its lines and for making such connections will take a share of the through toll (terminal expenses being first deducted) pro rata according to distance, not greater than that customarily charged by it for like distances, and will also allow any telephone exchange located outside the territory of the Licensee to be designated by the Licensor to connect with the Licensee's lines for the purpose, and substantially in the manner and upon the terms herein provided in respect to such trunk line connections. In respect of all communications or messages originating on its lines and which are to be routed or forwarded over any other lines, the Licensee shall require the patron or subscriber to bind himself to pay the tolls thereon and to make every communication or mes-age subject to such contracts, stipulations, and limitations of liability of such other lines as the Licensor may from time to time require, in such form as it may from time to time prescribe, and will hold the Licensor harmless from all loss or expense consequent upon the Licensee's failure so to do. Whenever the consent of a commission or other public tribunal to the use by the Licensor or the Licensee of the plant or other facilities of the other is required by law, no agreement made under and pursuant to the provisions
265 of this paragraph shall be effective until such consent is obtained.

The Licensor may enter the offices and connect with the exchanges of the Licensee any lines to points without the territory of the Licensee or to points within said territory for connection with which the Licensee is not authorized to use telephones furnished hereunder, in order to establish communication between patrons of such exchanges and parties at such points reached by said lines, and may there operate said lines with suitable appliances; the Licensee will permit its patrons to use such lines; and by its own operators will handle such communications or messages to and from its patrons, or make the proper switchboard or other connections for direct communication, as may be requested, and in such manner, not inconsistent with the proper conduct of its office, as the Licensor shall direct. But if the Licensor is not satisfied with the manner in which it is performed, it may establish its own offices and trunk and radiating lines for such purpose.

6. The Licensee will cause each of its exchanges to route, over the lines of the Licensor and of such parties as the Licensor may from time to time appoint, all communications to points outside the Licensee's territory, or to points within said territory for connection with which the Licensee is not authorized to use telephones furnished hereunder, originating at such exchanges, on its lines or at the exchanges or on the lines of its connecting companies within its territory, or coming on the wires or within the control of the exchange, where the Licensor or its said appointee has wires and will accept the same, so far as the Licensee can lawfuly control the same and unless otherwise specially directed by its patrons, but the Licensee
266 will not solicit such special directions or receive or pay tolls for transmission over other lines unless compellable by laws

so to do. Each such communication on which the charge is reversed shall be considered as originating at the station against which the charge is to be made.

The Licensee shall keep and furnish an account of each such communication, and of connections made therefor, and shall collect and on demand pay over to the Licensor or its said appointees, respectively, the tolls for transmission beyond the exchange, according to such rates and rules as each shall establish, and shall exhibit its accounts and the tickets from which they are made, so far as may be proper to verify the same. The Licensee, in the handling of all business interchanged hereunder shall observe the Licensor's operating methods and rules from time to time established for the use of its lines and shall keep such records and furnish such reports in respect thereto as the Licensor may from time to time request.

Each exchange shall, if and when so requested by the Licensor, make proper switchboard or other connection between the lines of the Licensor or its Licensees from points without such exchange and terminating in such exchange office, for the purpose thereby of making up a through line between points without such exchange. In respect of all the business referred to in this article, the Licensee shall make no charge to its own subscriber or patron, but shall be entitled to the following compensation and none other: The Licensee shall receive, upon communications originating at an exchange or toll station of the Licensee or of a connecting company of the Licensee within its territory and passing over the trunk lines re-
267 served to the Licensor by Article 5, fifteen per cent of the amount received from the tolls for each such communication, not to exceed twenty cents for any one communication; provided, however, that whenever the party entitled to said toll employs the toll operator who has charge at the originating exchange of completing such communication, the sum to be received by the Licensee for each such communication shall not exceed ten cents, and provided further that the Licensee shall receive upon each such communication originating at a public telephone pay station of an exchange double the aforesaid compensation; the amount so received as aforesaid by the Licensee to include compensation to the Licensee for the use of all facilities of an exchange furnished for and in connection with such communications whether to or from such exchange, except the facilities required to establish connection between an exchange station and the toll switchboard in which said trunk lines terminate or between an exchange station and the toll trunks when such trunks are employed to effect connection with such toll switchboard; for the use of which excepted facilities the Licensee is compensated by its rates for exchange service in such exchange. In case an exchange shall be required to make a switchboard connection for the purpose of making up a through line between points without such exchange, the exchange shall receive, as compensation for making such connection, such compensation as may be agreed upon.

7. For telephones unlawfully detained from the Licensor or lost or destroyed otherwise than by fire or unavoidable casualty, the Li-

censee will pay to the Licensor such sum per telephone, not
268 to exceed five dollars, as the Licensor may from time to time determine; but said payments shall not confer any right to the telephone, or to its use, or satisfy any other breach of covenant, or impair the right of the Licensor to obtain possession of any such telephone. The Licensor shall, at its own expense, replace or repair each defective telephone delivered to it for that purpose at the warehouse of the Western Electric Company, Incorporated, most convenient to the territory of the Licensee, and will, as the Licensee may from time to time request, deliver to it at said warehouse such parts for making replacements in telephones in service or on hand as it may then reasonably need; minor parts for such replacements to be furnished without charge and major parts, as defined from time to time by the Licensor, to be paid for by the Licensee at the reasonable cost thereof, and all such major parts, whether intact, defective or broken, returned by the Licensee to the Licensor at said warehouse to be repurchased by the Licensor at the then current cost to it of corresponding new parts.

8. The Licensee admits the validity of all patents relating to telephony and telephonic appliances now or hereafter held by the Licensor or under which it may hold licenses exclusive in their character, and the validity of its title thereto, and will not dispute the same.

9. The Licensee is entitled to receive from the Licensor, in addition to all other services and benefits accruing hereunder to the Licensee, the following described services and privileges:

(*a*) The right to use, subject to the provisions herein set forth, all telephonic devices, apparatus, methods and systems covered
269 by patents now or hereafter owned or controlled by the Licensor or which it may have the right to authorize the Associated Companies of the Bell System to use, and also the right to use, subject to the provisions herein set forth, as and when completed and standardized, all new and improved apparatus and developments in the art of telephony resulting from the research and experimental work conducted by or under the direction of the Licensor and hereinafter referred to; and, without expense to the Licensee, protection and defense against and to be saved harmless from all actions or suits, charging infringement of patents, arising out of the use of telephones furnished hereunder to the Licensee; as well as ample provision for protecting and defending against, and insuring the Licensee against judgments for damages and profits in, all actions or suits, charging infringement of patents, arising out of the use of any apparatus, methods or systems which the Licensor may recommend.

(*b*) The continuous prosecution by the Licensor of the fundamental work of research, investigation and experimentation in the development of the art and science of telephony and in the development of plans, methods, systems and ideas designed to promote safety, economy and efficiency in the equipment, construction and operation of the telephone plants of the Associated Companies of the

Bell System, and the direction by the Licensor of the development work by others for the production of materials and apparatus necessary for rendering the products of such work of the Licensor available for use by such Associated Companies.

(c) Advice and assistance in general engineering, plant, traffic, operating, commercial, accounting (including the auditing of
270 accounts), patent, legal, administrative and other matters pertaining to the efficient, economical and successful conduct of the telephone business of the Licensee; such advice and assistance to be given by the Licensor through the issuance to the Licensee of data, discussions and conclusions, including bulletins, books, circular letters, and standard specifications and blueprints, and through the performance of specific work in cases of unusual magnitude and complexity where such work is necessary or desirable.

(d) Advice and assistance in any financing required to be done by the Licensee in the extension, development or improvement of its telephone system within its said territory and in the general matter of its finances; aid in securing funds on fair terms, as and when needed for new construction and other expenditures, but not, at any time, to a greater extent than the then condition of the finances and credit of the Licensor may permit; active assistance in the marketing of the Licensee's securities; and such other necessary financial support and assistance in the premises as will tend to serve the best interests of both Companies.

(e) The right to extend to the subscribers and other patrons of the Licensee and its connecting companies within its said territory the privilege of using, upon payment of the regular tolls therefor, the connections provided for in said license contracts between its system and the systems of the other Associated Companies of the Bell System for telephonic communication between such subscribers and other patrons and the subscribers and other patrons of such Associated Companies and of their connecting companies in their respective territories.

271 (f) Active assistance, co-operation and support in connection with the adoption from time to time by the Licensee of such measures as will, in the united judgment of the parties hereto, best protect and preserve the health and promote the well-being in employment of the employees of the Licensee and, in other ways, conserve the high quality of its service to the public through the maintenance of a stable, contented and efficient personnel; the continued maintenance by the Licensor, in accordance with and subject to the terms of the agreement heretofore made by the parties hereto for the interchange of the benefit obligations of the plans heretofore adopted by them respectively and each entitled "Plan for Employees' Pensions, Disability Benefits and Death Benefits," and at not less than its original amount, of the Fund heretofore established by the Licensor under its said Plan; and the continued right to the Licensee, whenever at any time the Fund established under its said Plan shall be insufficient for the performance of its

obligations thereunder, to have recourse, to the amount of the deficiency, to said Fund of the Licensor in accordance with and subject to the terms of said agreement for the interchange of benefit obligations.

(*g*) The right to the Licensee, for the betterment of the service throughout its said territory, to extend to its connecting companies within its said territory, on such terms and conditions as it may determine, the benefit of such engineering and other technical advice and information in respect to construction, maintenance, repair and operation of plant as the Licensee may receive from the Licensor.

10. In order that the foregoing services may be promptly and efficiently performed when needed by the Licensee, the Licensor will:

272 (*a*) Render available for use by the Associated Companies of the Bell System all products of the Licensor's fundamental work of research, investigation and experimentation, and all inventions, discoveries and patents, and all methods and systems covered by patents, relating to the art of telephony, or all apparatus and appliances, methods and systems embodying such inventions, discoveries and patents, which, after investigation, experimentation and tests, are in each case pronounced by the technical experts of the Licensor to be of advantageous and practical usefulness in telephony and recommended for use, and to this end, if any patent rights held by others in any such invention or discovery are necessary to make such invention or discovery available for such use, the Licensor will, in case such invention or discovery relates to telephones, acquire the requisite patent rights therein, and, in case such invention or discovery relates to other than telephones, provide suitable arrangements for making the apparatus, appliances, methods and systems embodying such invention or discovery available for use as aforesaid; provided that each such acquisition or arrangement can, in the judgment of the Licensor, be consummated on reasonable terms.

(*b*) Maintain continuously an organization of specialists trained in the various branches of the work required to be done by the Licensor in rendering the foregoing services, of such numbers and possessed of such technical knowledge and experience as will enable said work to be so done as to relieve the Licensee from the necessity of attempting to perform said work for itself.

(*c*) Maintain continuously or cause to be so maintained proper circuit and other facilities for connections, as herein provided,
273 between the said system of the Licensee and the systems of the other Associated Companies of the Bell System for telephonic communication between the subscribers and other patrons of the Licensee and of its connecting companies within its said territory and the subscribers and other patrons of such other Associated Companies and of their connecting companies within their respective territories.

11. In consideration for said license contracts and for all benefits accruing to the Licensee hereunder, the Licensee is paying and shall

continue to pay to the Licensor a sum equal to four and one-half per cent (4½%) of the total gross earnings of the Licensee, which shall be payable in monthly installments, as herein provided, and in accordance with the established practice of the parties hereto, and shall be computed as follows: Such total gross earnings shall comprise the following accounts described and defined in the Licensor's Accounting Circular No. 8, Standard Telephone Accounts, Bell Telephone System, issued under date of December 28, 1912: Account 500 Subscribers' Station Revenues, Account 501 Public Pay Station Revenues, Account 504 Private Exchange Lines, and Account 510 Message Tolls. From the total of such accounts, shall be deducted Account 304 Uncollectible Operating Revenues. To the difference between the aforesaid revenues and the aforesaid deductions therefrom shall be added (*a*) the sum of Seventy-five Cents (75c) per telephone per month for all telephones not in use in excess of three per cent (3%) of the total number of telephones standing charged to the Licensee on the last day of such month, said three per cent (3%) representing the maximum number of
274 telephones believed to be necessary to be kept in stock by the Licensee, and (*b*) for sublicensed or other operating telephone companies not under license contracts from the Licensor and in which the Licensee owns a majority of the capital stock, the same proportion of their gross revenues computed as aforesaid as the proportion of their stock which is owned by the Licensee; provided, however, that, on application by the Licensee for the exclusion of such gross revenues of any such sublicensed or operating company, the question shall be carefully considered and determined on the facts in each such case.

The amount of each installment of said sum equal to four and one-half per cent (4½%) of the Licensee's total gross earnings due for each month shall be determined by such total gross earnings of the second preceding month, computed in the manner aforesaid, and a statement, over the signature of the proper accounting officer of the Licensee, of its total gross earnings for each calendar month, computed in the manner aforesaid, with the number of telephones in use and in stock in its territory on the last day of said calendar month shall be sent to the treasurer of the Licensor, or to such other officer of the Licensor as it may theretofore designate, on or before the fifteenth day of the next succeeding month and payment in Boston or New York funds shall be made on or before the tenth day of the month next following, that being the month for which such payment is due. Further statements of telephones shall be made by the Licensee at such times and in such detail as the Licensor may from time to time request.

The Licensee will make such reports, giving such information regarding the operations of its exchanges and lines as the
275 Licensor may from time to time request.

12. If the Licensee shall fail to pay any sums due hereunder for thirty days after the same shall become payable, or shall violate any other terms or conditions of this memorandum, and shall persist in such default, violation, or neglect or fail to remedy or repair

the same for sixty days after written notice thereof from the Licensor, or shall become bankrupt or insolvent, the Licensor may, if it shall so elect, by written notice to the Licensee, terminate all rights of the Licensee hereunder, and may resort to any of its rights and remedies in law or in equity, under the patent laws or otherwise, including the remedy by injunction against the Licensee or those claiming under it, for the use of any of its patented inventions or telephones not justified by a subsisting license hereunder, or for the violation of any other of its rights. The Licensor may also upon such termination, if it so elects, take possession of all lines, switchboards, fixtures, apparatus, appliances, and premises of the Licensee used for carrying on its business, and occupy and operate the same, or connect such lines with offices of its own; and collect from any patron, subscriber or other party all sums then or thereafter due to the Licensor or to the Licensee for the use of any telephones, circuits and appliances, or under any subscription contract or under any sub-license or connecting agreement for the interchange of business; and may enforce these provisions by an entry, without being deemed guilty of any trespass, or by legal process, including an injunction to prevent any interference with the Licensor (and others permitted by it) in the use of said telephones, lines, switchboards, fixtures, apparatus and appliances. The property so
276 taken, which does not belong to the Licensor or revert to it hereunder, may be returned within three months from the taking, in which case it shall pay to the Licensee a reasonable compensation for its use, or the Licensor may retain the same as its own property and shall pay therefor a reasonable price (not exceeding the actual cost) within four months after the taking, and shall account to the Licensee for all sums collected which accrued before the Licensor became so entitled to possession, deducting all expenses incident thereto, and all that may be due to it. These rights and remedies of the Licensor shall, in case of any default, if the Licensor shall so elect, apply only to the exchange or exchanges in which such default has occurred. The Licensor may also use the name of the Licensee to protect the Licensor's interests and to enforce the Licensor's rights hereunder, and the Licensee shall execute assignments in accordance herewith.

13. The contractual relations hereunder are personal to the Licensee, and any assignment or attempt to assign its rights hereunder or the lines established hereunder or any or either of them, by act of the party or operation of law, without the written consent of the Licensor, will be good ground for a cancellation hereof by the Licensor. The Licensee will keep and observe all the stipulations herein contained on its part to be kept and performed. Whenever the Licensor grants to others the rights for exchanges or any of its rights under Articles 5 and 6 hereof or for connecting lines or any other rights remaining to it, the stipulations hereof relating thereto shall be binding upon and inure to the benefit of such grantees, and the Licensor shall not be responsible for their acts or defaults. If the Licensor shall transfer to any party who

277 shall agree to perform the stipulations hereof, its title to the telephones furnished and licensed hereunder and the patent rights under which they are licensed, and its then existing rights hereunder, the provisions hereof shall inure to the benefit of and be binding upon such party in respect of all things done or to be done after such assignment, as if it were named a party hereto, and the Licensor shall no longer be responsible hereunder.

14. The Licensee shall assume and pay any and all taxes, whether federal, state, county, municipal or other, which may be assessed for or on account of or by reason of the telephones furnished or business done hereunder, to whomsoever assessed.

15. The rights of the Licensee hereunder shall be perpetual, unless sooner determined as herein provided, and the territory hereinabove referred to as the territory of the Licensee is as follows, viz.:

The State of Connecticut, excepting such portion thereof as is included within a radius of thirty-three (33) miles from the City Hall in the City of New York, in the State of New York; subject to the rights of the Providence Telephone Company under its agreement with the Licensee and The American Bell Telephone Company, dated December 1, 1902, in respect to so much of the County of New London as lies south of the division line between the towns of Stonington and North Stonington in said county, and east of an adopted division line, all points of which are one (1) mile due west of the Connecticut-Rhode Island State Line, extending south from said town line to the Long Island Sound, as shown substantially by highway intersections in drawing 1-A-60 attached to said agreement as Exhibit "A."

278 16. Said license contracts, as now and heretofore in effect and as evidenced by this memorandum, are hereby in all respects ratified and confirmed.

In Witness Whereof, the parties hereto have caused their respective corporate seals to be hereto affixed and these presents to be subscribed in their names and behalf by their respective officers thereto duly authorized.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY,

By —— ——,
President.

Attest:

—— ——,
Secretary.

THE SOUTHERN NEW ENGLAND TELEPHONE COMPANY,

By —— ——,
President.

Attest:

—— ——,
Secretary.

279 In regard to the compensation to be paid to the Southwestern Company by the United States government for the use of its properties during the period of Federal control, the witnesses of the Southwestern Company testified:

The accountant testified:

280 The amount of compensation the United States government has agreed to pay for the use of the company's properties does not figure in the company's operating expenses. The operating expenses are shown "just as if the company had been operated as a separate and private corporation as in the past."

Mr. Gleed: Now assuming that the government said to us: "You have thirty million dollars of property, we will see that during the period we hold this you get 6 per cent on $30,000,000, net, applicable to dividends to your subscribers to your stockholders. Now what would actually happen would be that we would make as much as we could, and if we only made 4 per cent the government would make up the two. Now what we are actually making from the public, what the public under present conditions are doing for us is the thing that this commission wants, because you are undertaking to say what the rate shall be for the future and not what it shall be for the past; in the future we have only the public to depend on; therefore, what the government may do for us for one year that is past has nothing whatever, no bearing whatever on the problem that is before you. You have got to determine, if you can, what under present condition of rate we can do in the ensuing year, and you judge that from what the public has paid us in the past.

281 The General Manager of the Southwestern Company testified;

282 Q. You put into effect May 1st some new exchange rates on the order of Federal authority: I wish you would tell the commission how much attention and study was given to the arrangement of that schedule. Did you get up some morning and write it down before 10 o'clock and wire Mr. Burleson if you could put it in, and put it in a day after that; or did it have a reasonable amount of study and attention?

A. It was not done in a couple of hours, Mr. Gleed, and I think that it had as careful attention as it possibly could have. To make that situation clear I think we have got to look at the situation that was confronting the telephone company: wages back as early as 1916 began to be a necessity for increasing wages in order to keep our employes and preserve our service; our revenues were fixed, except through the action of the Public Service Commission after our presenting proof and we were making an inadequate return at that time. Our natural action was to meet that demand for increased wages with as minimum an increase in wages as we thought would take care of it. At that time no one knew how long the war was going to last; no one knew whether that was a temporary situation or permanent situation. I don't think at that time any one

283 conceived wages would reach the point as they have now. We went on in an effort to protect our service, making such

increases in wages as were necessary and started at that time to take up with this commission our necessity for increased revenue and began filing cases. Mr. Robinson's evidence has shown a great many inventories were taken and a great many cases filed here during 1917 and 1918 in an effort to meet that situation. Our living costs were going up, our wages were going up all that time. We had presented to this commissioon something like, in the spring of 1918, something like forty cases, as I remember, on which we had on the plants involved in those cases, we had made inventories, we had revenues and expenses, we had exact data which we presented to this commission, and we applied for certain increased rates in those exchanges which were necessary to meet the situation. Now that was going on at the time these properties were taken by the Government. We realized, and in time it was realized more, what was coming and were busy taking inventories of other properties, studying our revenues and expenses on all these exchanges in order to make applications to meet the istuation. Then came Federal control——

Q. Now, just on moment: Before Federal control came an application for increased revenue on tolls?

A. Yes, sir.

Q. Which was very promptly granted?

A. Granted by this commission. At that time, however, our increase in wages had exceeded the revenue that we expected from that.

That Federal control, that didn't change the situation as re-
284 gards the wage earner, there was still a demand for additional wages, still the necessity of keeping our employes in competition with other employers and still the necessity for granting these increased wages; we had to make application to the Postmaster-General, recommendations as to wage increases; our service was deteriorating due to the loss of these employes; he was not without his complaints as to the service and in due course of time he realized that the wage increases that had been made were inadequate, he approved some of them as we recommended them, and he soon realized that his revenue due to increased expenses was not going to meet the compensation and then he apparently took an account of stock and said this: "Now you are recommending wage increases, when we are already running behind our compensation: Take into account your wage increase you have already made, take into account all your revenue you are getting from all resources, which has been made, take into account your estimate of the additional wages necessary to keep your employes and protect this service, and let me have recommendation as to where and what is the best way of raising this additional revenue;" that is the way that thing was done.

Q. It came about initially as a proceeding to raise the money to pay the increased cost of labor?

A. Pay the increased cost of labor and protect this telephone service. Now we made such a study which indicated we needed about $500,000.00 additional revenue. We had before us these studies

that we had been making all during this period; we had before us these cases we had filed with the commission.

285 Commissioner Simpson:

Q. That $500,000.00 additional and about $110,000.00 with that allowed you on increased toll rates?

A. Yes, sir; that was over and above all the other revenues that had been established; we had this exact data on these forty cases and we had other studies.

Q. At any rate, you understand it was necessary to enable the Government to come out even, you have no doubt about that?

A. No doubt whatever, as my understanding is this: The Government compensation was based on what the company had earned during a previous three-year period, in order to put this back where these net earnings were, what they were before the war, that was what was necessary to meet the compensation, just put them back where they were before, not to raise them above that, but put them back where they were before the war.

Chairman Busby:

Q. So that the present rates put in by the Postmaster-General are based upon that necessity——

A. On that necessity.

Q. —of raising enough revenue to enable the Government to meet its compensation needs?

A. In other words, to put the company's earnings back to where they were before the war; that is the underlying basis of that compensation agreement, as I understand it.

Q. If the Government had to have these rates in order to enable you to pay, say 5 per cent on the stock, if that was the Government's guarantee, you have to have the same rates to do the same thing, haven't you?

A. Yes, sir; there is no change in our expense, there is no possibility of the returns being different; you understand the Government took the total returns from this property and guar-
286 anteed this average earning.

* * * * * * *

Q. Now, your expense had so increased that you had to have, to cover pay rolls alone, half a million dollars revenue, more?

A. To cover the pay roll increases that had been made in that time and the pay roll increases that in our judgment as operators of this property were necessary to keep the employes, to be made in the near future, to keep the employes and perserve the service.

* * * * * * *

Q. At any rate, you were asked to recommend rates?

A. Yes, sir.

Q. You say you sat down, you and your aids, and placed before you all these valuations and income and outgo statements that you have, and all the other data. Now, what did you try to do, Mr. Hale?

A. We tried to establish a rate which would be fair to each community, a rate under which no community would pay the costs in any other community; we tried to establish a rate which would bear investigation as being a fair and reasonable rate; in other words, we distributed that in the same manner that we would have distributed had we been going to come before the Commission——

Q. You didn't have any——

A. —and support the rate in each town. We didn't have in all the towns the exact data which we would want to present to the Commission; we had approximate information and had our knowledge as to telephone operators, or what the situation was in these different towns and what rate was necessary for different sized towns.

287 Q. Did you have prejudices against some towns and make favorites out of other towns?

A. I don't think so; I had no conscious knowledge of any prejudices.

Q. Did you distribute that burden just as fairly and equitably as it was possible for you to do it?

A. I think so.

Q. Now, it is true, is it not, that wages would be higher in per cent in some towns than in others?

A. Yes, sir.

Q. Isn't it also true that the rates in some towns were more inadequate than the rates in others?

A. Yes, sir; certain towns in which the rates were seriously inadequate, the amount of the raise in rate in these towns was greater than it was in other towns where the rate prior to the increase was more nearly adequate. In other words, we attempted to establish a level of rates which would be fair, a new level of rates.

Q. You thought, in March and April, when you were getting up this recommendation, that the increase in pay rolls was going to be about a certain figure. Did your anticipation prove out with the reality?

A. We have had to make some further increases than we anticipated at that time.

Q. You had bigger increases than you had in mind at that time?

A. Yes, sir.

Q. Then, when you had worked this out to the best of your judgment, to whom did you forward it?

A. Forwarded it to the Postmaster General, through the operating board, which was in charge of the operation for him at that time.

Q. You don't know whether it went direct to the operating board or direct to the Postmaster General?

A. I think it went through the operating board.

Q. And in the course of time you got back an approval of it and direction to put it in?

A. Yes, sir.

288 The General Commercial Superintendent of the Southwestern Company testified:

289 Mr. Barry has prepared an exhibit showing the cases where the Commission has passed on the rates and the changes made May 1st in the rates, excepting St. Louis, which was introduced in evidence as Exhibit 257, and is as follows:

(Here follows Exhibit 257, marked page 289¼.)

Mr. Barry has prepared an exhibit showing the cases filed with the Commission and the rates asked for in those cases, together with the rates put in effect on May 1st, 1919. There are 27 of those cases. This exhibit was introduced in evidence as exhibit 258, and is as follows:

(Here follows Exhibit 258, marked page 289½.)

Case.	Rates in effect pr (Same Date effect.	Business. 1-pty.	Ex
Aurora	12–1–18	3.00	1.(
Charleston	10–1–18	2.50‡	1.(
Kirksville	2–1–19	3.00	1.(
Lancaster	9–1–18	2.00‡	1.(
New Madrid	2–1–19	2.50‡	1.(
Springfield	9–1–18	4.00	1.(
Webster Groves-Kirkwood	4–1–18	4.00c	1.(

NOTES.—

‡Desk equipment 25c additional.

*Wall equipment only, without bells 50c, desk equipment 75c.

zRates were not changed.

a 2-party business rate of $4.00 also included.

b 4-party residence " " 2.00 " "

c 2-party business " " 3.50 " "

d 2-party " " " 4.00 " "

Commercial Engineer, St. Louis, Missouri, October 26th, 1919.

EXHIBIT 257.

Exchanges under Orders of the Public Service Commission of Missouri During 1918 *and Order of the Postmaster General.*

Monthly Rates.

Rates in effect prior to effective date of Postmaster General rates (Same as rates allowed by the Commission.)

	Date effect.	Business.		Residence.			Rural service.			
		1-pty.	Ext.	1-pty.	2-pty.	Ext.	Bus.	Res.	Bus.	
.....	12–1–18	3.00	1.00	2.00	1.75	.50‡	1.50	1.50	.50	
.....	10–1–18	2.50‡	.75‡	1.50‡	....	.50‡	1.50	1.50	.50	
.....	2–1–19	3.00	1.00	1.75	....	.50	1.50	1.50	.25	
.....	9–1–18	2.00‡	1.00‡	1.50‡	....	.50‡	1.50	1.50	.25	
.....	2–1–19	2.50‡	.75‡	1.50‡	....	.50‡	2.00	1.50	.50	
.....	9–1–18	4.00	1.00	2.25	1.75	.65*	1.50	1.50	.50	
.....	4–1–18	4.00c	1.00	2.50	2.00	.50	2.50	2.00	.50	

bells 50c, desk equipment 75c.

also included.
" "
" "

souri, October 26th, 1919.

919 *with Rates Subsequently Increased in the Corresponding Exchanges under*

s.	Date effect.	Rates in effect subsequent to the effective date of the Postmaster General rates.								
		Business.		Residence.			Rural service.			
		1-pty.	Ext.	1-pty.	2-pty.	Ext.	Bus.	Res.	Bus.	Res.
0	5–1–19	3.00	1.00	2.00	1.75	.50‡	2.00	1.50	1.00	.50
0	7–1–19	2.75‡	.75‡	1.75‡	....	.50‡	2.00	1.50	1.00	.50
5	7–1–19	3.00	1.00	1.75	....	.50	2.00	1.50	1.00	.50
5	5–1–19	2.00‡	1.00‡	1.50‡	....	.50‡	2.00	1.50	.70	.35
0	‡	2.50‡	.75‡	1.50‡	....	.50‡	2.00	1.50	.50	.50
0	5–1–19	5.50*a*	1.00	2.50	2.25*b*	.65*	2.50	2.00	1.50	.75
0	5–1–19	4.50*d*	1.00	2.50	2.25	.50	2.50	2.00	1.00	.50

Case.	Date filed.	Rates applied for. Business. 1-pty.	Residence. 1-pty.	Residence. 2-pty.	Rural service. Bus.	Rural service. Res.	Rural service. Bus.	Rural service. Res
Bismarck ...	8-30-18	2.50‡	1.50‡	....	1.50	1.50	.50	.50
Blue Springs.	3-31-19	2.50‡	1.50‡	....	2.00	1.50	.50	.50
Brookfield ..	11-29-18	3.50	2.00	1.75	1.50	1.50	.33⅓	..
Carrollton ..	3-31-19	3.50	2.00	1.75	2.00	1.50*a*	.50	.50
Chaffee	9-30-18	2.50‡	1.50‡	....	1.50	1.50	.50	.50
Chillicothe ...	4-26-18	3.50	2.00	1.75*b*	1.50	1.50	.50	.5
Eureka	7-30-18	2.50‡	1.50‡	....	1.50	1.50	.50	.5
Hannibal ...	11-20-18	4.50	2.50	2.00	2.25	1.75	.50	.5
Hornersville .	3-31-19	2.50‡	1.50‡	....	2.00	1.50	.50	.5
Lamar	3-31-19	2.50‡	1.50‡	....	2.00	1.50	.50	.5
Lees Summit.	3-31-19	3.00	2.00	1.50	2.00	1.50	.50	.5
Marceline	12-31-18	2.75‡	1.75‡	1.50‡	2.00	1.50	.33⅓	..
Marionville ..	3-31-19	2.50‡	1.50‡	....	2.00	1.50	.50	.
Marshall	6-21-17	3.00‡	2.00‡	1.75‡	1.50	1.50	.50	.
Moberly	3-31-19	4.00	2.25	2.00	2.25	1.50	.50	.
Monett	8-25-18	3.00	2.00	1.75	1.50	1.50	.50	.
Neosho	12-31-18	3.00	2.00	1.75	2.00	1.50	.50	
Oran	9-30-18	2.50‡	1.50‡	....	1.50	1.50	.50	
Peirce City..	9-30-18	2.50‡	1.50‡	....	1.50	1.50	.25	
Poplar Bluff.	3-31-19	4.00	2.00	1.75	2.25	1.50	.50	
Senath	3-31-19	2.50‡	1.50‡	....	2.00	1.50	.50	
Sikeston	3-31-19	3.50	2.00	1.75	2.00	1.50	.50	
Slater	3-31-19	2.75‡	1.75‡	....	2.00	1.50	.50	
Stanberry ...	3-31-19	2.75‡	1.75‡	....	2.00	1.50	.50	
St. Clair.....	7-30-18	2.50‡	1.50‡	....	1.50	1.50	.50	
St. Louis....	12-2-12	10.00	4.00	3.00*c*	....	....	...	
Trenton	12-31-18	3.50	2.00	....	1.50	1.50	.50	

NOTES.—

‡Desk equipment 25c additional.

a Grounded line, $1.25.

b 4-party residence rate of $1.50 also included.

c 4-party " " " 2.00 " "

d 4-party " " " 2.50 " "

Commercial Engineer, St. Louis, Missouri, October 26th, 1919.

1919, *but Not Acted upon, With the Rates Increased in the Corresponding ster General, Effective May* 1, 1919.

Rates effective May 1, 1919.							
Busi-	Residence.		Rural service.				
ness.							
1-pty.	1-pty.	2-pty.	Bus.	Res.	Bus.	Res.	Hearings held.
2.50‡	1.50‡	....	2.00	1.50	1.00	.50	None.
2.50‡	1.50‡	....	2.00	1.50	1.00	.50	"
3.50	2.00	1.75	2.00	1.50	1.00	.50	"
3.50	2.00	1.75	2.00	1.50*a*	1.00	.50	"
2.50‡	1.50‡	....	2.00	1.50	1.00	.50	Hearing set for June 10, 1919, but later cancelled.
4.00	2.00	1.75*b*	2.25	1.50	1.00	.50	August 7, 1918.
2.50‡	1.50‡	....	2.00	1.50	1.00	.50	November 27, 1918.
4.50	2.50	2.00	2.25	1.50	1.00	.50	None.
2.50‡	1.50‡	....	2.00	1.50	1.00	.50	"
2.50‡	1.50‡	....	2.00	1.50	1.00	.50	"
3.00	2.00	1.50	2.00	1.50	1.00	.50	"
2.75‡	1.75‡	1.50‡	2.00	1.50	1.00	.50	Hearing set for May 8, 1919, but later postponed.
2.50‡	1.50‡	....	2.00	1.50	1.00	.50	None.
3.50	2.00	1.75	2.00	1.50	1.00	.50	September 18, 1918. April 28, 1919.
4.00	2.25	2.00	2.25	1.50	1.00	.50	None.
3.00	2.00	2.75	2.00	1.50	1.00	.50	December 3, 1918.
3.00	2.00	1.75	2.00	1.50	1.00	.50	March 19, 1919.
2.50‡	1.50‡	....	2.00	1.50	1.00	.50	June 10, 1919 (cancelled).
2.50‡	1.50‡	....	2.00	1.50	.80	.50	December 3, 1918.
4.00	2.00	1.75	2.25	1.50	1.00	.50	None.
2.50‡	1.50‡	....	2.00	1.50	1.00	1.00	"
3.50	2.00	1.75	2.00	1.50	1.00	.50	"
2.75‡	1.75‡	....	2.00	1.50	1.00	.50	"
2.75‡	1.75‡	....	2.00	1.50	1.00	.50	"
2.50‡	1.50‡	....	2.00	1.50	1.00	.50	November 26, 1918.
9.00	4.00	3.25*d*	....	....	....	...	Several.
3.50	2.00	....	2.00	1.50	1.00	.50	None.

290 Referring to Exhibit 258, Mr. Barry testified that in Moberly a rate for business telephones of $4.00 was asked, which is the same rate that was put into effect on May 1st, 1919; a rate of $2.25 for residence telephones was asked, which is the same rate that was put into effect on May 1st, 1919; in Lees Summit a $3.00 business rate was asked, which is the same rate put into effect May 1st, 1919; a rate of $2.00 for individual lines, residence, and $1.50 for two-party line residence was asked for, which are the same rates put into effect May 1st, 1919; in Hannibal a business telephone rate of $4.50 was asked for, which is the same rate put into effect May 1st, 1919; in Carrollton a business rate of $3.50 was asked for, which is the same rate put into effect May 1st, 1919; a rate of $2.00 for individual line residence was asked for, which is the same rate put into effect May 1st, 1919. In Carrollton there is no difference between the rates asked for and the rates put into effect May 1st, 1919, with the exception of one change in the farmer or rural rates. In fact, in all the list of cases on Exhibit 258 which were on file with the Commission, only two changes between the rates which the Commission were asked for and the rates put into effect May 1st, 1919, were made. These changes were: In Chillicothe, a rate of $3.50 was asked for individual business line, and a rate of $4.00 was put into effect May 1st, 1919; in Marshall a rate of $3.00 for individual business line was asked for, and a rate of $3.50 was put into effect May 1st, 1919. Otherwise the rates put into effect May 1st, 1919, called the Burleson rates, are the same as the rates for which the company had petitioned the Commission in the cases the Commission dismissed.

291 The following changes were made in the rural rates:

A. The rural rates where the rate was $1.50 for the company-owned rural lines we continued that rate for the residence subscribers and added 50 cents to that rate for business subscribers located on the rural lines—in most cases that was a 50-cent increase in one or two cases.

Commissioner Simpson:

Q. What are they, country stores?

A. Yes, sir. In the case of Chillicothe the rural business rate was increased to $2.25, also in Moberly to $2.25, and Poplar Bluff $2.25; the other changes was in the service station lines for business subscribers, general stores principally, where the rate was made double the rate of the residence subscriber; that was followed all the way through; there was a few changes made in the service station rate for residences—the service station rate was increased from 33 1/3 cents in Brookfield to 50 cents, in Marceline from 33-1/3 cents to 50 cents, Pierce City 25 cents to 40 cents; that practically covers all the changes.

Mr. Moon:

Q. Is that service station what is commonly known as extensions?
A. Where the farmers own the line and telephone or own the telephone, the line and poles up to the city limits.

Commissioner Simpson: That is what we term ordinary switching—the Bell Company calls them service stations, and we refer to them as switching stations.

Mr. Gleed:

Q. What proportion of your rural subscribers come under this head of business?
A. I would say it was less than one per cent.

The changes in the rural rates, therefore, amount to a very small sum per year. Prior to May 1st, 1919, there were a great many variations in the rural rates which were hard to justify. The changes that have been made have been made with the idea in view of making rural rates practically uniform.

292 2. Financial History:

The witnesses of the Southwestern Company testified that all of its outstanding stock, bonds, and notes were sold for cash at par.

The Company was known as The Missouri and Kansas Telephone Company until about January 1, 1917, and operated in the State of Kansas and in the western half of the State of Missouri. About January 1, 1917, the Company's name was changed to Southwestern Bell Telephone Company. It then acquired all the property of The Southwestern Telegraph and Telephone Company, which operated solely in the eastern half of the State of Missouri, including the City of St. Louis.

Since that time the Company has purchased all of the property of the Southwestern Telegraph and Telephone Company in Arkansas.

The accountants for the Southwestern Company testified as follows in regard to its financial history and the dividends paid by it, and its predecessors.

The accountant testified:

293 He has re-examined the records of the Southwestern Bell Telephone Company and its predecessors in relation to the matter of capital stock now issued and the amount received therefor, and has compiled a statement, from the books of the Missouri & Kansas Telephone Company, showing what stock it sold and what it received for it, down to and including the year 1916. This statement was introduced in evidence as Exhibit 1, and is as follows:

EXHIBIT 1.

The Missouri and Kansas Telephone Company.

Statement of Capital Stock Issued from 1882 *to December* 31, 1916.

Year.	Par value, amount issued.	Discount.	Received.	Const'on.
1882	$550,000		$550,000.00	
1883	370,000	$250.00	369,750.00	
1884				
1885				
1886	80,000	145.25	79,854.75	
1887	210,800		31.00	$210,769
1888				
1889	4,000		2,000.00	2,000
1890				
1891	10,000		5,000.00	5,000
1892				
1893				
1894				
1895				
1896	16,000		8,000.00	8,000
1897				
1898				
1899				
1900	171,200		171,200.00	
1901	914,500		906,000.00	8,500
1902	775,500		732,500.00	43,000
1903	420,300		420,300.00	
1904	100		100.00	
1905	96,400			96,400
1906	8,900		200.00	8,700
1907				
1908				
1909				
1910	10,000,000		10,000,000.00	
1911				
1912				
1913				
1914				
1915				
1916				
Total	$13,627,700	$395.25	$13,244,935.75	$382.369

Witness stated that Exhibit 1 correctly stated what it purports to state.

He also prepared from the books of the Southwestern Telegraph and Telephone Company, which formerly owned and operated the St. Louis exchange and others in the eastern part of Missouri, a statement showing the amount of stock that was issued by that company up to and including 1916, with a statement of what it received in exchange for that stock. This statement was introduced in evidence as Exhibit 2, and is as follows:

294 EXHIBIT 2.

The Southwestern Telegraph and Telephone Company (Mo.).

Statement of Capital Stock Issued from 1879 *to* 1916, *Inclusive.*

Year.	Par value, amt. is'd.	Premium.	Cash received.	Plant & const'n.	Other.
1879 ..	$400,000	.....	.....	*$400,000	....
1880 ..	.....	.....	.....	.....	....
1881 ..	.....	.....	.....	.....	....
1882 ..	.....	.....	.....	.....	....
1883 ..	.....	.....	.....	.....	....
1884 ..	.....	.....	.....	.....	....
1885 ..	.....	.....	.....	.....	....
1886 ..	.....	.....	.....	.....	....
1887 ..	.....	.....	.....	.....	....
1888 ..	.....	.....	.....	.....	....
1889 ..	.....	.....	.....	.....	....
1890 ..	.....	.....	.....	.....	....
1891 ..	.....	.....	.....	.....	....
1892 ..	.....	.....	.....	.....	....
1893 ..	.....	.....	.....	.....	....
1894 ..	.....	.....	.....	.....	....
1895 ..	.....	.....	.....	.....	....
1896 ..	.....	.....	.....	.....	....
1897 ..	.....	.....	.....	.....	....
1898 ..	591,000	.....	$591,000.00	.....	....
1899 ..	514,500	.....	514,500.00	.....	....
1900 ..	.....	.....	.....	.....	....
1901 ..	494,500	.....	494,500.00	.....	....
1902 ..	.....	.....	.....	.....	....
295					
1903 ..	794,800	.....	794,800.00	.....	....
1904 ..	711,300	4,765.00	716,065.00	.....	....
1905 ..	499,300	3,051.00	502,351.00	.....	....
1906 ..	1,200,700	3,675.25	1,204,375.25	.....	....
1907 ..	1,553,900	.....	1,553,900.00	.....	....
1908 ..	2,019,800	.....	2,019,800.00	.....	....
1909 ..	8,200	2,846.37	11,046.37	.....	....

*Issued for certain rights of original stockholders.

Analy

Capit

Year.		Increase during year.
Dec 31,	1882	.....
	1883	$370,000.00
	1884	.....
	1885	.....
	1886	80,000.00
	1887	210,800.00
	1888	.....
	1889	4,000.00
	1890	.....
	1891	10,000.00
	1892	.....
	1893	.....
	1894	.....
	1895	.....
	1896	16,000.00
	1897	.....
	1898	.....
	1899	.....
	1900	171,200.00
	1901	914,500.00
	1902	775,500.00
	1903	420,300.00
	1904	100.00
	1905	96,400.00
	1906	8,900.00
	1907	.....
	1908	.....
	1909	.....
	1910	10,000,000.00
	1911	.....
	1912	.....
	1913	.....
	1914	.....
	1915	.....
	1916	.....

EXHIBIT 3.

The Missouri and Kansas Telephone Company.

Analysis of Capital Liabilities, Years 1882 *to* 1916 (*December* 31).

	Capital stock.		Bonded debt.	
	Increase during year.	Total end of year.	Increase during year.	Total end of year.
.....	.....	$550,000.00	.....	.....
.....	$370,000.00	920,000.00	.....	.....
.....	.....	920,000.00	.....	.....
.....	.....	920,000.00	.....	.....
.....	80,000.00	1,000,000.00	.....	.....
.....	210,800.00	1,210,800.00	.....	.....
.....	.....	1,210,800.00	.....	.....
.....	4,000.00	1,214,800.00	.....	.....
.....	.....	1,214,800.00	.....	.....
.....	10,000.00	1,224,800.00	$85,000.00	$85,000.00
.....	.....	1,224,860.00	†22,500.00	62,500.00
.....	.....	1,224,800.00	.....	62,500.00
.....	.....	1,224,800.00	†22,500.00	40,000.00
.....	.....	1,224,800.00	.....	40,000.00
.....	16,000.00	1,240,800.00	†40,000.00	.....
.....	.....	1,240,800.00	.....	.....
.....	.....	1,240,800.00	.....	.....
.....	.....	1,240,800.00	.....	.....
.....	171,200.00	1,412,000.00	500,000.00	500,000.00
.....	914,500.00	2,326,500.00	12,000.00	512,000.00
.....	775,500.00	3,102,000.00	†16,000.00	496,000.00
.....	420,300.00	3,522,300.00	.....	496,000.00
.....	100.00	3,522,400.00	†21,000.00	475,000.00
.....	96,400.00	3,618,800.00	†12,000.00	463,000.00
.....	8,900.00	3,627,700.00	†6,000.00	457,000.00
.....	.....	3,627,700.00	†13,000.00	444,000.00
.....	.....	3,627,700.00	†9,000.00	435,000.00
.....	.....	3,627,700.00	†15,000.00	420,000.00
.....	10,000,000.00	13,627,700.00	†12,000.00	408,000.00
.....	.....	13,627,700.00	†12,000.00	396,000.00
.....	.....	13,627,700.00	926,400.00	1,322,400.00
.....	.....	13,627,700.00	†766,900.00	555,500.00
.....	.....	13,627,700.00	†87,500.00	468,000.00
.....	.....	13,627,700.00	†18,000.00	450,000.00
.....	.....	13,627,700.00	†21,500.00	428,500.00

Notes and bills payable.		Total capital liabilities.	
Increase during year.	Total end of year.	Increase during year.	Total end of year.
.....	.....	.....	$550,000.00
.....	.....	$370,000.00	920,000.00
$10,230.00	$10,230.00	10,230.00	930,230.00
†10,230.00	.....	†10,230.00	920,000.00
.....	.....	80,000.00	1,000,000.00
.....	.....	210,800.00	1,210,800.00
.....	.....	.....	1,210,800.00
.....	.....	4,000.00	1,214,800.00
.....	.....	.....	1,214,800.00
.....	.....	95,000.00	1,309,800.00
.....	.....	†22,500.00	1,287,300.00
.....	.....	.....	1,287,300.00
.....	.....	†22,500.00	1,264,800.00
.....	.....	.....	1,264,800.00
.....	.....	†24,000.00	1,240,800.00
.....	.....	.....	1,240,800.00
50,000.00	50,000.00	50,000.00	1,290,800.00
313,000.00	363,000.00	313,000.00	1,603,800.00
†140,500.00	222,500.00	530,700.00	2,134,500.00
†220,000.00	2,500.00	706,500.00	2,841,000.00
47,500.00	50,000.00	807,000.00	3,648,000.00
150,000.00	200,000.00	570,300.00	4,218,300.00
1,005,000.00	1,205,000.00	984,100.00	5,202,400.00
4,070,000.00	5,275,000.00	4,154,400.00	9,356,800.00
5,310,000.00	10,585,000.00	5,312,900.00	14,669,700.00
2,070,000.00	12,655,000.00	2,057,000.00	16,726,700.00
1,150,000.00	13,805,000.00	1,141,000.00	17,867,700.00
950,000.00	14,755,000.00	935,000.00	18,802,700.00
†8,300,000.00	6,455,000.00	1,688,000.00	20,490,700.00
2,400,000.00	8,855,000.00	2,388,000.00	22,878,700.00
707,335.35	9,562,335.35	1,633,735.35	24,512,435.35
1,275,000.00	10,837,335.35	508,100.00	25,020,535.35
150,364.65	10,987,700.00	62,864.65	25,083,400.00
†418,500.00	10,569,200.00	†436,500.00	24,646,900.00
270,000.00	10,839,200.00	248,500.00	24,895,400.00

Year.	Par value, amt. is'd.	Premium.	Cash received.	Plant & const'n.	Other.
1910 ..	800†	.....	.....	.....	†800
1911 ..	...	.....	.....	.....	....
1912 ..	1,212,800	.....	1,212,800.00	.....	....
1913 ..	.....	.....	.....	.....	....
1914 ..	.....	.....	.....	.....	....
1915 ..	.....	.....	.....	.....	....
1916‡ .	.....	.....	.....	.....	....
Total ..	$10,000,000	$14,337.62¶	$9,615,137.62	$400,000	$800

Witness testified that Exhibit 2 correctly shows what it purports to show; and that he also prepared from the records of the company a statement showing chronologically the capital stock, bonded debt, notes and bills payable of the Missouri & Kansas Telephone Company from the date of its incorporation down to and including the year 1916, and that this statement correctly shows what it purports to show. This statement was introduced in evidence as Exhibit 3, and is as follows:

(Here follows Exhibit 3, marked page 296.)

†Correction of error.

‡The Southwestern Telegraph and Telephone Company (Mo. Corporation) sold all of its property to Southwestern Bell Telephone Company (Mo. Corporation) on January 1, 1917, and was dissolved.

¶Of this, $9,647.79 was returned to stockholders.

He also prepared a similar statement covering a similar period as Exhibit 3 for the St. Louis company—that is, the company formerly known as the Bell of Missouri and as the Southwestern Telegraph and Telephone Company. This statement was offered in evidence as Exhibit 4, and he stated that it correctly showed what it purports to show and is as follows:

EXHIBIT 4.

The Southwestern Telegraph and Telephone Company.

Analysis of Capital Liabilities, Years 1882 *to* 1916 (*December* 31).

Year.	Capital stock. Increase during year.	Capital stock. Total end of year.	Notes and bills payable. Increase during year.	Notes and bills payable. Total end of year.	Total capital liabilities. Increase during year.	Total capital liabilities. Total end of year.
Dec. 31, 1879	.....	.....	.....	.....	.....	.....
1880	.....	$400,000.00	.....	.....	.....	$400,000.00
1881	.....	400,000.00	.....	.....	.....	400,000.00
1882	.....	400,000.00	.....	.....	.....	400,000.00
1883	.....	400,000.00	.....	.....	.....	400,000.00
1884	.....	400,000.00	.....	.....	.....	400,000.00
1885	.....	400,000.00	.....	.....	.....	400,000.00
1886	.....	400,000.00	.....	.....	.....	400,000.00
1887	.....	400,000.00	.....	.....	.....	400,000.00
1888	.....	400,000.00	.....	.....	.....	400,000.00
1889	.....	400,000.00	.....	.....	.....	400,000.00
1890	.....	400,000.00	.....	.....	.....	400,000.00
1891	.....	400,000.00	.....	.....	.....	400,000.00
1892	.....	400,000.00	.....	.....	.....	400,000.00
1893	.....	400,000.00	.....	.....	.....	400,000.00
1894	.....	400,000.00	.....	.....	.....	400,000.00
1895	.....	400,000.00	.....	.....	.....	400,000.00
1896	.....	400,000.00	.....	$386,580.00	$386,580.00	786,580.00
1897	.....	400,000.00	.....	283,880.00	488,300.00	1,274,880.00
1898	$591,000.00	991,000.00	†102,700.00	.....	230,620.00	1,505,500.00
1899	514,500.00	1,505,500.00	†283,880.00	334,540.00	334,540.00	1,840,040.00
1900	.....	1,505,500.00	334,540.00	169,020.00	328,980.00	2,169,020.00
1901	494,500.00	2,000,000.00	†165,520.00	696,980.00	527,960.00	2,696,980.00
1902	.....	2,000,000.00	527,960.00	593,000.00	690,820.00	3,387,800.00
1903	794,800.00	2,794,800.00	†103,930.00	712,750.00	831,050.00	4,218,850.00
1904	711,300.00	3,506,100.00	119,750.00			

EXHIBIT 4—*Continued.*

Year.	Capital stock.		Notes and bills payable.		Total capital liabilities.	
	Increase during year.	Total end of year.	Increase during year.	Total end of year.	Increase during year.	Total end of year.
1905.....	499,300.00	4,005,400.00	298,675.00	1,011,425.00	797,975.00	5,016,825.00
1906.....	1,200,700.00	5,206,100.00	613,725.00	1,625,150.00	1,814,425.00	6,831,250.00
1907.....	1,553,900.00	6,760,000.00	†18,010.00	1,607,140.00	1,535,890.00	8,367,140.00
1908.....	2,019,800.00	8,779,800.00	†1,607,140.00	.....	412,660.00	8,779,800.00
1909.....	8,200.00	8,788,000.00	110,000.00	110,000.00	118,200.00	8,898,000.00
1910.....	.....	8,788,000.00	340,000.00	450,000.00	340,000.00	9,238,000.00
1911.....	.....	8,788,000.00	50,000.00	500,000.00	50,000.00	9,288,000.00
1912.....	†800.00	8,787,200.00	2,635,873.59	3,135,873.59	2,635,073.59	11,923,073.59
1913.....	1,212,800.00	10,000,000.00	†582,800.00	2,553,073.59	630,000.00	12,553,073.59
1914.....	.....	10,000,000.00	†55,000.00	2,498,073.59	†55,000.00	12,498,073.59
1915.....	.....	10,000,000.00	†248,356.00	2,249,717.59	†248,356.00	12,249,717.59
1916.....	.....	10,000,000.00	340,000.00	2,589,717.59	340,000.00	12,589,717.59

298 The properties formerly owned by the Missouri & Kansas Telephone Company, the Bell of Missouri and the Southwestern Telegraph & Telephone Company are now owned by the Southwestern Bell Telephone Company.

Q. What is the fact, generally speaking, as to the history of the capitalization of these two companies; how and for what was the stock sold, on what terms?

A. Practically all of the stock of both companies was issued for cash at par, with the exception that the M. & K. Company, Missouri & Kansas Telephone Company, was a discount of $395, fractional per cent, and less than 3 per cent of the capital stock was issued for plant and equipment purchased.

Q. And the year 1916, the amount of that capital stock was what?

A. The amount of the stock outstanding on December 31, 1916, was $13,627,700.00.

Q. Now, what was the fact in regard to the Bell of Missouri or Southwestern Tel. & Tel.?

A. All the capital stock of the Bell of Missouri, of the Southwestern Tel. & Tel. Company of Missouri, was issued for cash at par or for property, with the exception that in some cases premium was received.

Q. These statements show the details?

A. Yes, sir.

Q. And in regard to the Bell of Missouri Company or Southwestern Tel. & Tel., what is the fact in regard to its debt which was in existence at the end of 1916; what were its notes, bonds, and so forth, sold for?

A. The notes for the Southwestern Tel. & Tel. Company had been issued for cash at par.

Q. What is the fact about the notes and bonds of the Missouri & Kansas at the end of 1916?

A. The same fact applies to the M. & K., Missouri & Kansas Company, with the exception that there were a few small amounts of bonded debt assumed in the purchase of the properties.

He has examined the records of the Missouri & Kansas Telephone Company to ascertain what dividends were paid on stock during its history up to 1917, and has prepared a statement showing dividends paid (where any was paid) for each year from its organization down to and including 1916. This statement correctly shows what it purports to show and was introduced in evidence as Exhibit 5 and is as follows:

299 EXHIBIT 5.

The Missouri and Kansas Telephone Company.

Statement of Dividends Paid, Years 1882 *to* 1916, *Inclusive.*

Year.	Annual rate, %.
1882	None.
1883	2½
1884 to 1885	None.
1886 to 1887	4½
1888	5
1889	4½
1890	4¼
1891 to 1892	4
1893	5
1894	4
1895	5
1896 to 1897	4
1898	5
1899	6
1900	7
1901 to 1905	6
1906	4½
1907 to 1916	None.
Average	1.43

The Missouri & Kansas Telephone Company paid no dividends after 1906. The average dividend paid on actual cash subscribed and paid in on the stock of the Missouri & Kansas Telephone Company during its entire life was 1.43 per cent. No dividends were either paid or earned from 1906 to the end of 1916. Neither
300 this company nor the Southwestern Telegraph and Telephone Company earned any more than it paid. The average dividend paid by the Bell of Missouri or Southwestern Telegraph & Telephone Company during its history was 5.9 per cent. This company sold its property at the end of 1916 to the Missouri & Kansas Telephone Company, which changed its name to the Southwestern Bell Telephone Company. A statement which correctly shows the dividends paid by the Southwestern Telegraph & Telephone Company during the last seven years of its history was introduced in evidence as Exhibit 6 and is as follows:

EXHIBIT 6.

Southwestern Bell Telephone Company (Mo.).

Statement of Dividends Paid During Years 1910 *to* 1916, *Inclusive.*

Year.	Annual rate.
1910	6 per cent
1911	4 per cent
1912	4 per cent
1913	3 per cent
1914	3 per cent
1915	3 per cent
1916	4 per cent
Average dividend paid during entire period of company's life	5.9 per cent

Exhibit 6 shows the actual dividends of the Southwestern Telegraph & Telephone Company for seven years, and states the average for the entire life of the Company since 1879 as 5.9 per cent. The Bell of Missouri was the predecessor of the Southwestern
301 Telegraph & Telephone Company, which changed its name to the Southwestern Telegraph & Telephone Company in March, 1913, but has been the same company since 1879.

Q. In making up these statements of the average return how did you proceed? I mean to ask you this: Did you take the per cent paid for each year for thirty-five years and add those per cents and divide by 35?

A. No, sir; I didn't.

Q. How did you proceed?

A. I took the actual money dividends paid and the actual capital stock on which such dividends were paid and obtained an average by showing the total capital stock issued as a base, and the total dividends paid as an amount to obtain the per cent with.

Q. In other words, you endeavored to ascertain what was the real result as to each thousand dollars represented?

A. Each dollar involved; yes, sir.

Q. And if you had twenty million dollars invested at one time and it paid nothing, and had four hundred thousand dollars invested only in 1882 in St. Louis, and you may have paid 12 per cent on that four hundred thousand dollars for that one year, but the fact that there were twenty million invested at one time and only four hundred thousand dollars at the other is duly taken into consideration?

A. Yes, sir.

Q. So as to get at the real result to the capital stock that started the enterprise; is that the idea?

A. Get the real return to each dollar invested.

Com. Blair: Then the 5.9 per cent interest is not based on the twenty millions, but whatever happened to be issued?

A. Whatever happened to be issued at the time the dividends were paid; any average of dividend rates would not be correct.

302 The Bell of Missouri, or Southwestern Telegraph and Telephone Company was sold to the Missouri & Kansas Telephone Company, which changed its name to the Southwestern Bell Telephone Company about January 1st, 1917, on the following basis:

"The Southwestern Tel. & Tel. Company, the Eastern Missouri Company, on December 31st, 1916, had ten million dollars' worth of stock outstanding and had a physical property of something over $12,000,000.00; the Missouri & Kansas Telephone Company changed its name about January 1st, 1917, to the Southwestern Bell Telephone Company and purchased all the property, all the assets and all the liabilities of the Eastern Missouri Company, the old Southwestern Tel. & Tel. Company, for ten million dollars stock at par.

Q. Assumed its liabilities and purchased its property at its capitalization?

A. Yes, sir.

Q. And paid for it how?

A. Paid for it by the issuance of stock.

Q. So that there was no increase in that transaction of capitalization, but the capitalization of the entire property was, after the transaction was consummated, equal to the sum of the capitalization?

A. Capitalization was not increased through combination of the two companies, simply an exchange or a change from the capital stock in one company to the capital stock in the other.

Q. How did you handle the book account of the cost of the plant after you had purchased that property?

A. We put the plant on the books of the new company, of the purchasing company, at the book value at which it had been carried by the old company.

Q. Do you keep this book account of costs by exchanges
303 or do you keep it by states only?

A. We keep our book account of the plant by states.

Q. Do you keep it at this time by exchanges?

A. We have never and do not at the present time keep our property by exchanges.

Q. There was some change made, I think, Mr. Scott, in your practice about that in 1914; I will ask you what that change was.

A. I was going to add. In 1914, we inaugurated what we did call then Administrative Accounting; we now call it Departmental Accounting. Under that plan the net additions are being kept by exchanges. The field—by the field I mean plant department—maintain all gross additions and all gross removals in detail by exchanges on auxiliary records and supplemental reports and the sheets which will enable us at this time to tell with very little trouble the net additions since 1914 at any particular exchange.

Q. You general books now do not show the plant by exchanges?

A. The general books at this time do not.

Q. But you keep such supplemental records and memoranda that you can readily gather up by exchanges the net additions since 1914?

A. Yes, sir; such records are maintained by the department.

Q. Before that time you didn't even keep such records and memoranda?

A. Attempts had been made at times to keep them, but it apparently had been found impracticable and undesirable and the work involved presumbably was too expensive to warrant the cost of doing it for the value received, for the use that we made of such records, and such records were not kept continuously at any time; they were kept in spots; they were sporadic.

In 1914 the cost of any particular exchange could not be learned from the books and records of the company. The Commission's auditors have been over the company's books many times and are quite familiar with the condition as it is.

304 When asked why it was that since the Missouri & Kansas Telephone Company had not paid any dividend for the last twelve years of its existence and the Southwestern Telegraph & Telephone Company had paid only three or four per cent during the last years of its existence, when the two united into the Southwestern Bell Telephone Company the united properties paid a five per cent dividend, he answered:

A. At the time that the property of the Eastern Missouri Company was bought by the present company at the same time the Missouri, present Missouri company acquired an interest in the Pioneer Tel. & Tel. Company of Oklahoma, the Oklahoma corporation had been paying eight per cent and has continued to pay eight per cent since that time. We acquired this stock of the Oklahoma corporation, which amounted to $7,500,000 at that time and shortly after we got $500,000 more and since it has grown up to nearly ten million dollars, at par, and it, as you can see, was a very good investment and enhanced our earnings considerably.

Q. So that one reason why after that you did pay five per cent was that you had bought at par a large part of the stock of the Oklahoma Company which was paying and continues to pay eight per cent?

A. Yes, sir.

Q. That gave you eight per cent return on that much of your money that was invested?

A. Yes, sir.

Q. And that is one reason?

A. Yes, sir.

Q. You had stock in some other companies that were paying fairly well also, did you not?

A. Yes, sir; we own stock in considerable corporations at the present time.

Mr. Hamilton: What is the capital of the Southwestern?

A. $30,500,000.00.

Q. Isn't it also true while the Missouri & Kansas Company had not

been paying dividends, that it had been losing less and less and was on the up-grade?

A. Yes, sir; that is true, it has improved both in the M. & K. and the Eastern Missouri Company; it has continued to improve and the expenses were not climbing up at that time as fast as the increase in revenue was coming.

Q. Which is why you were able to pay in 1917 and 1918 this five per cent?

A. Yes, sir.

305 The company balance sheet of June 30, 1919, was introduced in evidence as Exhibit 15, and is as follows:

EXHIBIT 15.

Southwestern Bell Telephone Company (Mo.).

Balance Sheet, June 30, 1919.

Assets.	Amount.
Intangible Capital	$62,659.02
Right of Way	203,051.14
Land and Buildings	3,000,844.14
Central Office Equipment	7,418,119.23
Station Equipment	4,374,168.62
Exchange Lines	21,102,769.16
Toll Lines	9,097,983.47
Other Plant	129,457.31
General Equipment	672,110.67
Total Fixed Capital	$46,061,162.76
Construction Work in Progress	1,233,433.86
Investment Securities	15,717,610.48
Advances to System Corporations for Constr., etc.	878,939.73
Miscellaneous Investments	21,414.00
Total Permanent and Long Term Investments	$63,912,560.83
Cash and Deposits	$396,090.79
Marketable Securities	182,805.29
Bills Receivable	297,393.81
Accounts Receivable	1,482,022.83
306 Materials and Supplies	677,873.67
Total Working Assets	$3,036,186.39
Accrued Income Not Due	$73,653.21

	Amount.
Sinking Fund Assets	$23,304.18
Prepayments	97,894.44
Unamortized Debt Discount and Expenses	.....
Other Deferred Debts	266,651.57
Total Deferred Debit Items	$387,850.19
Total Assets	$67,410,250.62

Liabilities.

Capital Stock, Com.	$30,500,000.00
Capital Stock, Pref.	.....
Capital Stock Installments	.....
Total Capital Stock	$30,500,000.00
Premiums on Capital Stock:	
Funded Debt	397,000.00
Advances from System Corporations for Constr., etc.	25,614,086.09
Total Long Term Debt	$26,011,086.09
Bills Payable	27,000.00
Accounts Payable	814,624.04
Total Working Liabilities	$841,624.04
307 Accrued Liabilities Not Due	$517,860.19
Unextinguished Premium on Debt	.....
Insurance and Casualty Reserves	43,980.00
Liability for Employees' Benefit Fund	225,000.00
Liability on Account of other Provident Funds	.....
Other Deferred Credit Items	1,222.17
Total Deferred Credit Items	$270,202.17
Reserve for Accrued Depreciation	$7,956,090.26
Reserve for Amortization of Intangible Capital	6,992.11
Total Fixed Capital Reserves	$7,963,082.37
Undivided Profits, 1919	$235,135.93
Appropriated Surplus	.....
Corporate Surplus Unappropriated	1,071,259.83
Total Surplus and Undivided Profits	$1,306,395.76
Total Liabilities	$67,410,250.62

Exhibit 15 is the balance sheet of the Southwestern Bell Telephone Company as a whole as of June 30th, 1919. This company operates in the States of Missouri, Kansas and Arkansas, so that the balance sheet covers those three states.

Cross-examination.

By Mr. Hamilton:

Referring to Exhibits 1, 2, 3 and 4, he testified that all capital liabilities of the company represent actual cash paid with the exception of a very small amount which was issued for property. Almost all of the purchases made by the company of independent exchanges were paid for in cash, the plant account reflecting such cost.

308 The accumulated reserve for depreciation dates back prior to 1900. It has been sufficient up to the present time. The reserve account (Exhibit 15) now has to its credit $7,963,082.37.

Q. And you say that has been accumulated since 1900?

A. I made a guess at the date; in the Eastern Missouri Company it has been accumulating for some time; the M. & K. for some time prior to my connection with the company had no reserve at all; I would want to have exact data to answer the question.

Q. Isn't it a fact that the American Telephone & Telegraph Company gave the Missouri & Kansas in the form of surrendered notes more than a million dollars in order to give it a reserve, its reserve being in the red?

A. It happened in—no, sir, I can't tell you the date it happened; I have seen the record of it in the books.

Q. You know that was done?

A. Yes, sir; I have seen the record of it in the books.

Q. Its reserve hadn't been earned; it was given?

A. Yes, sir; its reserve was given to it.

An exhibit showing in detail the amount of dividends paid on stock of the Southwestern Telegraph and Telephone Company, the company operating in St. Louis and Eastern Missouri prior to the formation of the Southwestern Bell Telephone Company, was introduced in evidence as Exhibit 42 and is as follows:

EXHIBIT 42.

The Southwestern Telegraph and Telephone Company (Mo.).

Statement of Dividends Paid, Years 1880 *to* 1916, *Inclusive.*

Year.	Annual rate, %.
1880	None.
1881	10%
1882 to 1887	12%
1888	6%
1889 to 1897	12%
1898	10%
1899 to 1909	8%
1910	6%
1911 to 1912	4%
1913 to 1915	3%
1916	4%
Average	5.9%

Dividend rate.	Amount.	Per cent of total.
3%	$900,000	12.57
4%	1,103,008	15.40
6%	551,280	7.70
8%	3,748,096	52.33
10%	139,100	1.94
12%	720,000	10.06
Total	$7,161,484	100.00

369 The foregoing is all the evidence in regard to the Southwestern Company's financial history and dividends introduced by witnesses at the hearings in this case. However, in the St. Louis and Springfield cases which were made a part of the record in this case the witnesses for the Southwestern Company and the Commission testified as follows:

(a) The General Auditor of the Southwestern Company testified as follows in the St. Louis case:

310 JAMES K. WASS, being duly sworn, testified as follows:

Mr. Wass is general auditor of the Southwestern Telegraph and Telephone Company, formerly known as the Bell Telephone Company of Missouri. He has been connected with this company since June, 1903, as auditor and general auditor. He has under his personal charge and supervision the original books of the Bell Telephone Company of Missouri and the Southwestern Telegraph and Telephone Company, and has made an investigation of these books with the view of explaining to the Commission the financial history of the company.

The Bell Telephone Company of Missouri was incorporated in

1879 with a capitalization of $400,000 to take over the property, rights and other assets of the telephone business then operating in the City of St. Louis; this business consisted of a plant built and then operated by the American District Telegraph Company; at the time of the incorporation there were, I think, five people, five men, interested in the business, and all of those men had some interest directly or indirectly in this telephone business; the plant of the American District Telegraph Company, the right to do business here and all of the assets were gathered together and turned over to the new company called the Bell Telephone Company of Missouri; the stock was parceled out between these five gentlemen, who later turned back into the treasury of the company stock equivalent at par to $100,000, and this stock remained in the treasury a short time and was afterwards sold for cash equivalent at par to $100,000; a little later some of the territory and plant contained in the original deal was thought to be not necessary to the operation in the City of St. Louis, but was sold for $100,000 cash; starting—with the original incorporation of four hundred thousand dollars, the company progressed year after year until, in 1897, they had built plant and increased the business to such an extent that it was thought necessary to capitalize further, and in the succeeding year, 1898, capital stock subscriptions were asked for and obtained to the value of $591,000, so that at the end of December 31, 1898, the capitalization stood at $991,000; capital subscriptions in cash were thereafter asked for as the years went by and paid into the treasury of the company, until, on December 31, 1913, capital of the company stood at $10,000,000.

"All of the capital increase from $400,000.00 to $10,000,000.00 was paid in by the stockholders in cash." There are no bonds. In the original capitalization of the company at $400,000.00, $200,000.00 in cash was put in and $200,000.00 in property was put in for the $400,000.00 stock. The five men referred to as originally interested in the Bell Telephone Company of Missouri, which was incorporated in 1879, with the capitalization of $400,000.00, and the number of shares held by each, are as follows:

311	H. L. Stork	750 shares.
	George H. Kent	250 shares.
E. A. Smith		20 shares.
George F. Durant		750 shares.
H. H. Eldred		2,230 shares.

making a total in all of 4,000 shares at $100.00 per share, making the first $400,000.00.

An analysis of capital, liabilities, surplus and reserve for accrued depreciation for the years 1879 to 1913, inclusive, of the Southwestern Telegraph and Telephone Company, was introduced in evidence as Wass Exhibit 1, and is as follows:

(Here follows Wass Exhibit 1.)

Analysis of Capital Liab

Year.	Capital stoc: Increase during year.	
Dec. 31, 1879	.....	..
1880	.....	[illegible]
1881	.....	[illegible]
1882	.....	[illegible]
1883	.....	[illegible]
1884	.....	[illegible]
1885	.....	[illegible]
1886	.....	[illegible]
1887	.....	[illegible]
1888	.....	[illegible]
1889	.....	[illegible]
1890	.....	[illegible]
1891	.....	[illegible]
1892	.....	[illegible]
1893	.....	[illegible]
1894	.....	[illegible]
1895	.....	[illegible]
1896	.....	[illegible]
1897	.....	[illegible]
1898	.....	[illegible]
1899	$591,000.00	[illegible]
1900	514,500.00	1,50
1901	.....	1,50
1902	494,500.00	2,00
1903	.....	2,00
1904	794,800.00	2,79
1905	711,300.00	3,50
1906	499,300.00	4,00
1907	1,200,700.00	5,20
1908	1,553,900.00	6,75
1909	2,019,800.00	8,77
1910	8,200.00	8,78
1911	.....	8,78
1912	.....	8,78
1913	1,212,800.00	10,00

WASS EXHIBIT 1.

The Southwestern Telegraph and Telephone Company.

Analysis of Capital Liabilities, Surplus, and Reserve for Accrued Depreciation, Ye

	Capital stock.		Capital liabilities other than capital stock.		Total capita
	Increase during year.	Total end of year.	Increase during year.	Total end of year.	Increase during year.
.....	.....	.....	.....	.....	.....
.....	.....	$400,000.00	.....	.....	.....
.....	.....

ars 1879 *to* 1913, *Inclusive.*

l liabilities.	Reserve for accrued depreciation.		Surplus.	
Total end of year.	Increase during year.	Total end of year.	Increase during year.	Total end of year.
.....	.....	.....	.....	$46,048.75
$400,000.00	.....	.....	$13,890.93	59,939.68
400,000.00	.....	.....	48,937.35	11,002.33
400,000.00	.....	.....	†5,688.28	5,314.05
400,000.00	.....	.....	3,357.29	8,671.34
400,000.00	.....	.....	12,376.45	21,047.79
400,000.00	.....	.....	5,603.39	26,651.18
400,000.00	.....	.....	†18,095.82	8,555.86
400,000.00	.....	.....	1,898.38	10,454.24
400,000.00	.....	.....	33,151.14	43,605.38
400,000.00	.....	.....	22,617.23	66,222.61
400,000.00	.....	.....	29,921.53	96,144.14
400,000.00	.....	$21,979.41	88,571.22	184,715.36
400,000.00	$37,621.98	59,601.39	81,308.18	266,023.54
400,000.00	30,175.22	89,776.61	44,527.62	310,551.16
400,000.00	75,843.84	165,620.45	28,929.24	339,480.40
400,000.00	53,959.63	219,580.08	41,340.35	380,820.75
400,000.00	†100,000.00	119,580.08	39,754.76	420,575.51
786,580.00	.....	119,580.08	18,061.65	438,637.16
1,274,880.00	.....	119,580.08	1,883.16	440,520.32
1,505,500.00	†26,848.32	92,731.76	6,400.75	446,921.07
1,840,040.00	†44,676.18	48,055.58	1,093.08	448,014.15
2,169,020.00	†37,998.54	10,057.04	†15,319.23	432,694.92
2,691,980.00	.....	10,057.04	37,417.06	470,111.98
3,387,800.00	18,995.19	29,052.23	7,313.12	477,425.10
4,218,850.00	†29,052.23	.....	36,590.27	514,015.37
5,016,825.00	2,510.00	2,510.00	†100,531.78	413,483.59
6,831,250.00	1,320.00	3,830.00	1,431.98	414,915.57
8,307,140.00	1,800.00	5,630.00	127.85	415,043.42
8,779,800.00	16,093.34	21,723.34	4,461.57	419,504.99
8,898,000.00	1,522.54	23,245.88	†12,470.10	407,034.89
9,238,000.00	67,021.00	90,266.88	34,190.29	441,225.18
9,288,000.00	27,111.90	117,378.78	108,430.53	549,655.71
11,923,073.59	580,772.49	698,151.27	†483,302.50	66,353.21
12,553,073.59	60,352.35	758,503.62	†2,037.32	64,315.89

312 The stock issues referred to in Wass Exhibit No. 1 are the entire stock issues of the company, including that part of the business operated in St. Louis and outside of St. Louis. It does not purport to show the amount of the capital of the company invested in St. Louis alone. This company operates in the eastern half of the State of Missouri and two or three counties in the State of Illinois.

The total cost of the company's plant, as shown by the books of the company as of December 31, 1913, was $10,847,673.74. The St. Louis area is composed of St. Louis, East St. Louis, Clayton and Tri-City. In this area, as shown by the books of the company as of December 31, 1913, the company had a plant which originally cost $8,964,486.00 and in the area outside of the St. Louis area it had a plant which originally cost $1,883,187.00. The total book cost as of December 31, 1913, as shown by the books of the company, of the St. Louis Exchange, was $8,209,706.93, and of the Clayton Exchange $37,427.79. A statement showing the items of property composing the plant, with their values, was introduced in evidence as Wass Exhibit 2, and is as follows:

WASS EXHIBIT 2.

The Southwestern Telegraph and Telephone Company.

Exchange Plant Book Values as Shown by the Books December 31, 1913.

Elements of plant.	St. Louis.	E. St. Louis.	Clayton.	Tri-City.	Balance of territory.	Total company.
Real Estate—Land	$322,474.98	$7,390.00	.....	.....	$25,624.32	$355,489.30
Real Estate—Buildings	516,779.63	70,026.56	.....	.....	103,045.66	689,851.85
Central Office—Equipment	1,564,450.03	91,474.50	$8,596.83	$11,641.41	295,419.48	1,971,582.25
Subscribers' Station Equip	1,073,342.89	43,004.68	1,138.26	3,495.31	259,722.83	1,380,703.99
Exchange—Pole Lines	678,287.30	78,856.71	10,267.04	9,022.84	412,742.34	1,187,176.23
" Aerial Cable	1,000,014.76	151,793.65	9,667.07	23,561.82	420,933.83	1,605,971.13
" " Wire	655,417.05	91,235.44	7,120.25	3,027.11	243,724.08	1,000,523.93
" Underground Conduit	888,513.57	58,910.08	71.87	2,068.51	62,078.79	1,011,642.82
" " Cable	1,483,162.28	69,724.28	283.65	954.23	47,115.20	1,601,239.64
" Right of Way	27,264.44	3,043.93	282.80	120.88	12,780.55	43,492.60
Total	$8,290,706.93	$663,459.83	$37,427.79	$53,892.11	$1,883,187.08	$10,847,673.74

313 The figures shown on Wass Exhibit 2 are book costs for items of physical plant only, and do not include anything for the cost of establishing the business or working capital, and does not include the toll plant which the books show amounts to $1,463,-994.54, without anything for working capital and cost of establishing the toll business.

All of the $10,000,000.00 of stock issued by the company, shown on Wass Exhibit 1, was issued for cash at par, with the exception of $200,000.00 of the original $400,000.00 stock, which was issued for property. The item shown in column 5 of Wass Exhibit 1, under "Capital Liabilities Other Than Capital Stock" of $2,553,073.59, represents money borrowed to make additions and betterments from bankers and private capitalists, and when the company reached the limit of its borrowing power from those sources, from the American Telegraph and Telephone Company and from the Bell Company which operates in Arkansas and Texas.

This company had no reserve for depreciation until in 1909. Prior to that we had a method in the accounting of charging off the realized depreciation into our expense account and then equalizing it for the year by making a flat appropriation monthly so that at the end of the year it would cover the yearly realized depreciation; since 1909 we have set up a straight reserve for depreciation, which, although it has been indequate, has been the system now prescribed by the Interstate Commerce Commission. In all of the earlier years until quite recently depreciation as it accrued was taken care of through our expense accounts; some years it was high and other years it was low; we did not have any depreciation account, and we have not any record of the amounts as they accrued; we do not know how much depreciation there was in the years prior to 1909.

The first dividend of this company was paid in 1881; it was 10 per cent; from 1882 to 1887, inclusive, it paid 12 per cent; in 1888 it paid 6 per cent; from 1889 to 1897, inclusive, it paid 12 per cent; in 1898 it paid 10 per cent; in 1899 to 1909, inclusive, it paid 8 per cent; in 1910 it paid 6 per cent; in 1911 and 1912 it paid 4 per cent; and in 1913 it paid 3 per cent. Absolutely no stock dividends were ever issued.

314 (*b*) The Auditor for the Commission testified as follows in the St. Louis case:

315 The notes payable of $2,553,073.59 represent a note due to the Southwestern Telegraph & Telephone Company of New York, $2,428,073.59, Missouri & Kansas Telephone Company of $125,000; these notes were given for amounts due on account of cash advances; I verified these items by an examination of the accounts of both of these companies, and when I saw that they represented amounts due for cash advances, the amount that both the Southwestern Telegraph & Telephone Company of New York and the Missouri & Kansas have advanced to this company at various times cash; there have been charges made against this company and charges by this company against the other companies which have been counted out, and the real result is that the notes were

given for cash; a complete analysis of these two accounts were made and items of cash received and cash paid have been traced through the cash book and we have verified the accounts as being correct. The investment of the company is made up of exchange, plant and toll lines of $11,982,887.26. Construction work and progress, $70,946.46; other lands and other buildings of $327,222.18; investment in securities, $403,041.59, making a total investment on the part of the company of $12,784,097.49. Now the books would indicate that investment was paid for in the following manner: Capital stock sold for actual cash, $8,395,712.54; the capital stock was issued in payment on account of part of the plant and patent rights of $1,498,629.30; there was cash borrowed on the company's notes to the amount of $2,553,073.59, making a total of cash receipts from sale of stock and notes of $12,447,415.43. That would indicate that the amount had been invested in the company's investment and leaving a balance of $336,682.06 which would necessarily have had to come out of the earnings.

Q. Where did the rest of the money come from besides the $10,000,000 of stock making up the $12,000,000?

A. The cash borrowed on the Company's notes.

Q. Do they still owe this?

A. Yes, sir.

Q. How much are the notes outstanding?

A. $2,553,073.59.

316 The St. Louis plant value, as shown by us, is $7,900,932.16, less the reserve for depreciation of $502,453.56, making a net depreciated value of $7,398,478.60.

Q. What is it for, the total of the property of the Southwestern Telegraph and Telephone Company of Missouri, as you determined it?

A. This statement doesn't include the toll. The total would be $10,567,009.82, less reserve for depreciation of $670,877.78, leaving a depreciated value of $9,986,132.04.

Comm. Woerner:

Q. What does that represent you say?

A. That represents the statement of the company's investment in exchange plants as a whole, excluding the toll.

Comm. Shaw:

Q. What is it including the toll? Including all of this plant account?

A. The depreciated value would be $11,224,383.64.

Q. As a matter of fact, are you informed as to whether that represents the original cost of all of the items that have ever gone into the plant account, or whether it represents the original cost of all the items which are now contained in the physical property of this company?

A. From the examination of the books, I would think that those figures represent the original cost of the items now in operation, for

the reason that the company has reduced their plant account by removals; that is generally done monthly, and in the early years they wrote off yearly items on account of the removals, and the books would really indicate that the plant account is reasonably correct on that account.

Q. On the same page, too, you subtract from plant account or capital assets reserve for depreciation of $758,503.62 now, that was the amount of the balance of reserve appearing on the books of the company at the time you were making up these tables, was it not?

A. Yes, sir.

Q. That has nothing to do, so far as you know, with the amount that should, in fact, have been reserved by the company for this item of depreciation?

A. No, sir.

Q. To protect the integrity of the plant?

A. No, sir. No, sir.

Q. What I want to get at specifically is the idea of subtracting from capital account or capital assets the reserve for depreciation where the books show, as in this case, that the reserve for depreciation is also invested in capital assets.

A. For the simple reason that there has been a certain amount of depreciation accruing, and these assets, although they are shown on the book figures at the cost new, there is depreciation to be deducted before arriving at the present value.

Q. Now, purely as a bookkeeping figure, perhaps reserve is an obligation, but to get at the idea I want to get at here: Suppose the company had reserved $2,000,000 instead of $700,000 and had invested $42,000,000 in plant, and you were getting at from a bookkeeping standpoint the amount of capital assets that they were devoting to the service of the public, and you subtracted the two million dollars from the ten million dollars capital stock issued for cash and property; in other words, the better reserve they made and the bigger plant they built the smaller their capital assets would come for rate-making purposes, would it not, under your system?

317

A. There is just one statement that you made there in regard to deducting from the capital stock the reserve——

Q. Capital assets, I said, I meant to say.

A. I understood you; no, sir; they would not, for the reason that the depreciation is accruing continually and, although you did reinvest that two million dollars in new additions, still that would not wipe out the accrued depreciation on the old plant prior to the time of investing that two million dollars, and a reserve for depreciation is taken care of through the operating expense; the public pays back to the company annually in the form of a reserve for depreciation a certain portion of the plant, and they should not be expected to return, make a return, on that portion of the plant which they have turned back to the company in the form of a reserve for depreciation.

Q. That the company has turned it back to the public in the form of plant upon which the public is getting service?

A. No, sir; that is in the form of a new plant; they have not turned back to the public the old plant or the old accrued depreciation which is in the old plant, and they cannot turn that back to the public.

Mr. Gleed:

Q. Can I put one question? Suppose the reserve for depreciation was two million dollars; that is something that the public has paid to the company in cash? Suppose it has it in cash, is it not all right for it to invest it and let it earn something?

A. Yes, sir.

Q. Now, then, if you subtract the reserve for depreciation from the total plant account, you are not allowing any earnings on the two million dollars, are you?

A. I will continue the explanation that I started with Judge Harris, which I think will explain it: With the ten million dollar plant and a reserve of two million dollars for depreciation which has been paid back in the form of revenue by the subscribers, the company has received two million of its original investment, and they should only expect to get a return on eight million dollars because they have already been paid back the two million in actual cash; now, if they invest that two million dollars in other additions, then it will bring up their plant account to the original ten million upon which they are to receive a return.

318 (*c*) The Auditor for the Southwestern Company testified as follows in the Springfield case:

319 The authorized capital stock of the Missouri and Kansas Telephone Company in the year 1916 was $20,000,000; of which, on June 30th, 1916, there was issued and outstanding, $13,627,700. Mr. Benzel has made an investigation of what the company received for that stock, which disclosed that it received $13,244,953.75 in cash, $382,369 in telephone property, and there was a discount on the stock of $395.25. This stock was issued from the beginning of the company down to and including the year 1910. There has been no issue of the stock since the year 1910, and that discount occurs in the years 1883 and 1886, in the first instance $250, and in the second, $145.25. Practically all of the stock was sold for cash at par. Mr. Benzel has prepared an exhibit showing the amount of capital stock and the amount received therefor from the beginning of the company down to 1915, which was introduced in evidence as Exhibit 32, and is as follows:

EXHIBIT 32.

The Missouri & Kansas Telephone Company.

Statement of Capital Stock Issued from 1882 *to* 1915.

Year.	Par value, amount issued.	Discount.	Cash received.	Plant and construction.
1882...	$550,000.00	.....	$550,000.00	.....
1883...	350,000.00	.....	350,000.00	.....
1883...	20,000.00	$250.00	19,750.00	.....
1886...	79,585.00	.....	79,585.00	.....
1886...	415.00	145.25	269.75	.....
1887...	210,800.00	.....	31.00	$210,769.00
1889...	2,000.00	.....	.....	2,000.00
1889...	2,000.00	.....	2,000.00	.....
1891...	5,000.00	.....	.....	5,000.00
1891...	5,000.00	.....	5,000.00	.....
1896...	8,000.00	.....	.....	8,000.00
1896...	8,000.00	.....	8,000.00	.....
1900...	73,985.00	.....	73,985.00	.....
1900...	97,215.00	.....	97,215.00	.....
1901...	600,331.61	.....	600,331.61	.....
1901...	305,668.39	.....	305,668.39	.....
1901...	8,500.00	.....	.....	8,500.00
1902...	732,500.00	.....	732,500.00	.....
1902...	43,000.00	.....	.....	43,000.00
1903...	420,300.00	.....	420,300.00	.....
1904...	100.00	.....	100.00	.....
1905...	900.00	.....	.....	900.00
1905...	20,000.00	.....	.....	20,000.00
1905...	9,500.00	.....	.....	9,500.00
1905...	10,000.00	.....	.....	10,000.00
1905...	2,000.00	.....	.....	2,000.00
1905...	20,000.00	.....	.....	20,000.00
1905...	30,000.00	.....	.....	30,000.00
1905...	4,000.00	.....	.....	4,000.00
1906...	200.00	.....	200.00	.....
1906...	7,700.00	.....	.....	7,700.00
1906...	1,000.00	.....	.....	1,000.00
1910...	10,000,000.00	.....	10,000,000.00	.....
	$13,627,700.00	$395.25	$13,244,935.75	$382,369.00

NOTE.—No Capital Stock issued since 1910.

320 Q. What per cent of the total outstanding capital stock was issued for property?

A. A little less than 3%.

Q. What do you know about the value of the property that was taken in exchange for stock or what did the books show, if anything, about it?

A. The books showed that the property for a like amount of this capital stock was placed thereon at the time the stock was issued.

Q. What do you say, then, what is your impression from your study of the matter, as to whether there is any water in this stock?

A. No, sir; I don't think there is any water in the stock. The only thing that would show in the way of the issuance of stock for other than cash or its equivalent would be that $392.25; that was the only discount.

On December 31st, 1915, the Missouri & Kansas Telephone Company had issued a total number of 136,277 shares, of which the American Telephone & Telegraph Company owned 136,224 shares, or 99.96 per cent of the total number of shares. An exhibit showing the relative proportion of the stock of the Missouri & Kansas Telephone Company held by the American Telephone & Telegraph Company at different periods in its history, was introduced in evidence as exhibit 34, and is as follows:

EXHIBIT 34.

The Missouri and Kansas Telephone Company.

Statement of Outstanding Capital Stock of M. & K. Telephone Company from 1882 *to* 1915.

Year.	Total.	Owned by A. B. T. Co. and A. T. & T. Co.*	Owned by others.	Per cent of A. T. & T. Co. holdings to total.
1882.....	$550,000	$.....	$550,000	$.....
1883-84-85....	920,000	492,300	427,700	53.51
1886.....	1,000,000	525,000	475,000	52.50
1887-1888.....	1,210,800	601,000	609,800	49.64
1889-1890.....	1,214,800	603,000	611,800	49.64
1891.....	1,224,800	608,000	616,800	49.64
1892.....	1,224,800	610,300	614,500	49.83
1893-94-95....	1,224,800	610,800	614,000	49.87
1896.....	1,240,800	618,800	622,000	49.87
1897-98-99*...	1,240,800	619,300	621,500	49.91
1900.....	1,412,000	774,600	637,400	54.86
1901.....	2,362,500	1,162,900	1,163,600	49.98
1902.....	3,102,000	1,551,200	1,550,800	50.01
1903.....	3,522,300	1,942,700	1,579,600	55.15
1904.....	3,522,400	1,942,200	1,580,200	55.14
1905.....	3,618,800	1,942,200	1,676,600	53.67
1906.....	3,627,700	1,942,200	1,685,500	53.54
1907-08-09....	3,627,700	1,942,700	1,685,000	53.55
1910.....	13,627,700	11,942,700	1,685,000	87.63
1911.....	13,627,700	13,390,200	237,500	98.26
1912.....	13,627,700	13,561,200	66,500	99.51
1913.....	13,627,700	13,598,900	28,800	99.78
1914.....	13,627,700	13,622,100	5,600	99.96
1915.....	13,627,700	13,622,400	5,300	99.96

*On Nov. 11, 1899, the entire amount held by the American Bell Tel. Co. was transferred to the A. T. & T. Co.

Year.	Increase during year
Dec. 31, 1882	.....
" 1883	8370,000.00
" 1884	.....
" 1885	.....
" 1886	80,000.00
" 1887	210,800.00
" 1888	.....
" 1889	4,000.00
" 1890	.....
" 1891	10,000.00
" 1892	.....
" 1893	.....
" 1894	.....
" 1895	.....
" 1896	16,000.00
" 1897	.....
" 1898	.....
" 1899	.....
" 1900	171,200.00
" 1901	914,500.00
" 1902	775,500.00
" 1903	420,300.00
" 1904	100.00
" 1905	96,400.00
" 1906	8,900.00
" 1907	.....
" 1908	.....
" 1909	.....
" 1910	10,000,000.00
" 1911	.....
" 1912	.....
" 1913	.....
" 1914	.....
" 1915	.....
June 30, 1916	.....

*Indicates loss.

EXHIBIT 35.

The Missouri and Kansas Telephone Company.

Analysis of Capital Liabilities, Years 1882 to 1916 (June 30).

	Capital stock.		Bonded debt.	
	Increase during year.	Total end of year.	Increase during year.	Total end of year.
.....	.....	$550,000.00	.....	.....
.....	$370,000.00	920,000.00	.....	.....
.....	.....	920,000.00	.....	.....
.....	.....	920,000.00	.....	.....
.....	80,000.00	1,000,000.00	.....	.....
.....	210,800.00	1,210,800.00	.....	.....
.....	.....	1,210,800.00	.....	.....
.....	4,000.00	1,214,800.00	.....	.....
.....	.....	1,214,800.00	.....	.....
.....	10,000.00	1,224,800.00	$85,000.00	885,000.00
.....	.....	1,224,800.00	*22,500.00	62,500.00
.....	.....	1,224,800.00	.....	62,500.00
.....	.....	1,224,800.00	*22,500.00	40,000.00
.....	.....	1,224,800.00	.....	40,000.00
.....	16,000.00	1,240,800.00	*40,000.00	.....
.....	.....	1,240,800.00	.....	.....
.....	.....	1,240,800.00	.....	.....
.....	.....	1,240,800.00	.....	.....
.....	171,200.00	1,412,000.00	500,000.00	500,000.00
.....	914,500.00	2,326,500.00	12,000.00	512,000.00
.....	775,500.00	3,102,000.00	*16,000.00	496,000.00
.....	420,300.00	3,522,300.00	.....	496,000.00
.....	100.00	3,522,400.00	*21,000.00	475,000.00
.....	96,400.00	3,618,800.00	*12,000.00	463,000.00
.....	8,900.00	3,627,700.00	*6,000.00	457,000.00
.....	.....	3,627,700.00	*13,000.00	444,000.00
.....	.....	3,627,700.00	*9,000.00	435,000.00
.....	.....	3,627,700.00	*15,000.00	420,000.00
.....	10,000,000.00	13,627,700.00	*12,000.00	408,000.00
.....	.....	13,627,700.00	*12,000.00	396,000.00
.....	.....	13,627,700.00	926,400.00	1,322,400.00
.....	.....	13,627,700.00	*766,900.00	555,500.00
.....	.....	13,627,700.00	*87,500.00	468,000.00
.....	.....	13,627,700.00	*18,000.00	450,000.00
.....	.....	13,627,700.00	*10,000.00	440,000.00

Notes and bills payable.		Total capital liabilities.	
Increase during year.	Total end of year.	Increase during year.	Total end of year.
.....	.....	.....	$550,000.00
.....	.....	$370,000.00	920,000.00
$10,230.00	$10,230.00	10,230.00	930,230.00
*10,230.00	.....	*10,230.00	920,000.00
.....	.....	80,000.00	1,000,000.00
.....	.....	210,800.00	1,210,800.00
.....	.....	.....	1,210,800.00
.....	.....	4,000.00	1,214,800.00
.....	.....	.....	1,214,800.00
.....	.....	95,000.00	1,309,800.00
.....	.....	*22,500.00	1,287,300.00
.....	.....	.....	1,287,300.00
.....	.....	*22,500.00	1,264,800.00
.....	.....	.....	1,264,800.00
.....	.....	*24,000.00	1,240,800.00
.....	.....	.....	1,240,800.00
50,000.00	50,000.00	50,000.00	1,290,800.00
313,000.00	363,000.00	313,000.00	1,603,800.00
*140,500.00	222,500.00	530,700.00	2,134,500.00
*220,000.00	2,500.00	706,500.00	2,841,000.00
47,506.00	50,000.00	807,000.00	3,648,000.00
150,000.00	200,000.00	570,300.00	4,218,300.00
1,005,000.00	1,205,000.00	984,100.00	5,202,400.00
4,070,000.00	5,275,000.00	4,154,400.00	9,356,800.00
5,310,000.00	10,585,000.00	5,312,900.00	14,669,700.00
2,070,000.00	12,655,000.00	2,057,000.00	16,726,700.00
1,150,000.00	13,805,000.00	1,141,000.00	17,867,700.00
950,000.00	14,755,000.00	935,000.00	18,802,700.00
*8,300,000.00	6,455,000.00	1,688,000.00	20,490,700.00
2,400,000.00	8,855,000.00	2,388,000.00	22,878,700.00
707,335.35	9,562,335.35	1,633,735.35	24,512,435.35
1,275,000.00	10,837,335.35	508,100.00	25,020,535.35
150,364.65	10,987,700.00	62,864.65	25,083,400.00
*418,500.00	10,569,200.00	*436,500.00	24,646,900.00
.....	10,569,200.00	*10,000.00	24,636,900.00

321 The letters "A. B. T. Co." used in this exhibit refer to the American Bell Telephone Company, and the letters "A. T. & T. Co." refer to the American Telephone & Telegraph Company. These companies are the same. In the year 1899 the American Bell Telephone Company changed its name to the American Telephone & Telegraph Company.

On December 31st, 1916, the Missouri and Kansas Telephone Company had a total bond issue of $335,000 maturing in the year 1929, and there were also some bonds on some of the property which the company purchased. The total bond indebtedness of the company, including the bonds on purchased property, on June 30th, 1916, was $440,000. For the $335,000 of bonds issued by the Missouri & Kansas Telephone Company itself, it received cash at par, and for the bonds on the property which it purchased, it received property at the time of the purchase in equal amount. On June 30th, 1916, the bonded debt, notes and bills payable of the Missouri & Kansas Telephone Company was $11,009,200. The company received cash at par for the entire amount of notes and bills payable, amounting to $10,569,200. On June 30th, 1916, the total amount of the capital liabilities of the Missouri & Kansas Telephone Company, composed of outstanding stock, its own bonds, the bonds it assumed and its notes and bills payable, amounted to $24,636,900.

Q. You say that it received practically cash at par for all that stock and notes and bonds?

A. Yes, sir; it received cash at par for practically the entire amount. There was only about $93,500 of bonds that were received in the purchase of property.

Mr. Benzel has prepared an exhibit showing the growth and the total of the capital liabilities of the Missouri & Kansas Telephone Company up to June 30th, 1916, which was introduced in evidence as Exhibit 35, and is as follows:

(Here follows Exhibit 35, marked page 322.)

323 At the end of the year 1882 the total capital liabilities of the Missouri & Kansas Telephone Company were $550,000, made up entirely of capital stock, and on June 30th, 1916, its total capital liabilities had increased to $24,636,900. For the first ten years the increase was mainly made by the selling of shares of the capital stock. The borrowing began in 1898. In the year 1910 the capital stock was increased $10,000,000. That increase was due to the fact that a like amount of demand notes held by the American Telephone & Telegraph Company was surrendered for the issuance of stock for a like amount we had received previously in giving those notes, cash at par for the face of the note—that changes the form of the capital. It shows a decrease in the notes and bills payable of $8,300,000 due to the fact that within that year we also borrowed about $1,700,000, which would make the $10,000,000; and at that time, of course, those notes were bearing interest at the rate of 6 per cent and they accepted stock for which they received nothing in the way of dividends.

The Missouri & Kansas Telephone Company has not paid a dividend since 1906.

The money realized from this stock, bonds and notes was used in the building and construction of telephone plants and the purchase of properties from time to time. None of it was paid out in any illigitimate way.

Mr. Benzel prepared an exhibit showing the dividends paid by the Missouri & Kansas Telephone Company during its entire history, which was introduced in evidence as Exhibit 36, and is as follows:

324 EXHIBIT 36.

The Missouri and Kansas Telephone Company.

Statement of Dividends Paid, Years 1882 *to* 1906, *Inclusive.*

Year.	Annual rate, %.
1882	None.
1883	2½
1884 to 1885	None.
1886 to 1887	4½
1888	5
1889	4½
1890	4¼
1891 to 1892	4
1893	5
1894	4
1895	5
1896 to 1897	4
1898	5
1899	6
1900	7
1901 to 1905	6
1906	4½

Average rate paid from 1882 to 1915, 1.57%.

NOTE.—A special dividend of $79,585 was paid in stock on January 27, 1886.

No dividends paid since 1906.

Q. Does that statement correctly show the dividends and all the dividends that were paid?

325 A. Yes, sir; it does. It shows by years the annual rate of dividend paid from 1882 to 1906 both inclusive. In 1822 we paid nothing in dividends; in 1883 we paid 2½ per cent; 1884 and '85 they paid nothing. From 1886 to 1906 they paid dividends ranging from 4 per cent to 7 per cent, most of those amounts being at the rate of 4 or 4½ per cent. In the year 1906 they paid a dividend at the rate of 4½ per cent which was paid from surplus as the 1906 earnings would not allow a dividend to be paid, but since that time the company has not paid a penny in dividends on its capital stock which previously had been issued for cash or its equivalent.

The average rate of dividend paid by the company from 1888 to and including 1915 was 1.57 per cent of its capital stock. In the year 1916 no dividend was paid, "so that average rate would be lower somewhat if brought down to the end of June, 1916." The only special dividend paid was a dividend of $79,585.00, paid in stock on January 27th, 1886, and in computing this average dividend for the entire history of the company down to 1915, that stock dividend was included in the total amount of dividends paid. The dividend paid in 1906 was paid out of the surplus. As a matter of fact, no dividend at all was earned in the year 1906, and no dividend at all was either paid or earned in the years 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915 and 1916. In the years 1906 to 1912, inclusive, the company did not earn all the interest it paid.

No adequate reserve for depreciation has been set aside during the years 1906 to 1915, inclusive. In some of the years nothing whatever was set aside for reserve.

Q. You may tell the Commission why there was not any
326 reserve set aside in the years that it was not set aside?

A. We didn't begin our present day accounting until about the year 1910. At that time our company, that is, the New York office, issued an accounting bulletin for the guidance of all the associated Bell companies and it provided for a reserve for replacements, practically the same methods of accounting as we are now following under the Interstate Commerce Commission's prescribed rules and prior to that time the various Bell companies or several of them were not making any reserve, and the M. & K. Company was one that did not. In the year 1906 after paying interest there was a deficit of $120,657, without any reserve for depreciation being made. In the year 1907 after paying interest there was a profit of $29,125 without anything for reserve for replacements. In the year 1908 there was a deficit of $270,326 without anything being reserved for replacements. In the year 1909 there was a deficit of $21,635 with only $28,469 being reserved for replacements. That small amount was probably the only portion that was set aside for maintenance

that was actually offered and treated as a reserve. The real reserve accounting didn't begin until the year 1910, as previously stated. In that year they reserved $468,788. In the following year, 1911, they reserved all of the net revenue they had after paying interest which was $261,233. That same method was followed in the year 1912, which showed a reserve of $734,495. Now, beginning with 1913 we followed the Interstate Commerce Commission——

Commissioner Blair: You mean in addition to reserve in that amount the total reserve at that date?

Mr. Gleed: Total for that year.

327 The Witness: That was the gross addition. There were charges against that reducing it. Beginning with January 1st, 1913, at which time we started our accounting under the requirements of the Interstate Commerce Commission, we began making a larger reserve for replacements, which was yet inadequate. Depreciation of plant and equipment for the year 1913 as made by the company was $942,211. The balance of net income in that year was $92,000. In the year 1914 the reserve was $960,000, with a net income of $229,241. In the year 1915 the reserve was $960,000, with a balance of income of $523,636.

Q. What is the proper annual reserve according to the estimates of your engineer for the whole company—around what?

A. For what period?

Q. Nineteen fifteen.

A. The reserve on the average plant in service in the year 1915 at the rate of 7 per cent, which is the engineer's estimate of what it would be for the entire company, would be $1,513,142.

Q. Did you set aside that much?

A. No, sir; we received only $960,000.

Q. If you had set aside the proper reserve would there have been anything applicable to a dividend for that year?

A. No, sir; there would not.

Q. So you tell the Commission that the company has neither paid nor earned any dividend since at least 1905?

A. Yes, sir; that's right.

Commissioner Flad: Has your reserve fund remained stationary or has it increased as you go along?

Mr. Gleed: Have you an adequate reserve fund now?

A. No, sir; I don't think that the reserve fund at this time is adequate for the size plant that we have.

Q. You have now allowed in the last few years a little

328 reserve; how much is it? That is, now, how much is it stated both ways; explain the requirements of the Interstate Commerce Commission.

A. Beginning with January 1st, 1913, we followed the accounting as prescribed by the Interstate Commerce Commission and they require that we charge nothing against reserve for replacements except that which was provided in the reserve. We were making replacements in the year 1913, '14, '15 and so on, property for which a proper reserve had never been made, so we were not allowed to charge these replacements against the reserve, but we had to charge

that portion that had accrued since January 1st, 1913, to the reserve and the balance against——

Q. Surplus?

A. Well, it was the surplus account finally reached. It was the realized depreciation not provided for elsewhere, is the title of the account. It really is the realized depreciation of our plant in those years and charged to this account which is a deduction from our surplus.

Q. Let's illustrate that by a concrete example. Suppose that you replaced in 1915 a pole line that had been in use for ten years, estimated value $100,000.

A. A pole line estimated $100,000, replaced in the year 1915, in service ten years, we would estimate during the year 1915 was—at the middle of the year the replacement was made—we would estimate one-fourth for the years 1913 and '14 and a half of 1915, two and a half years, or one-fourth of the life of that plant of ten years would be charged against reserve and the other three-fourths would be charged against our surplus account and that accounting was followed on all elements of plant.

329 Q. What reserve did the company have as a whole at the end of 1915?

A. At the end of 1915 the company's reserve for depreciation was $2,110,660; and the surplus which was depleted on account of these realized depreciation items that I just mentioned showed a deficit of $637,655, or in reality the reserve less the surplus——

Q. Less surplus in red.

A. —would be $1,473,000.

Q. And that is all the real reserve you had, wasn't it?

A. Yes, that's all the real reserve, if the accounting had been where we could have charged these actual realized items against our reserve.

Commissioner Simpson: You had that on June 30th, 1915?

A. No, that is December 31st, 1915. Now, on June——

Commissioner Blair: Did you actually have that money or just a bookkeeping entry?

A. Just a bookkeeping entry, and it was represented, of course, by what we did have at one time in money. It was probably expended in the extensions of plant which is the practice of practically all the telephone companies.

Mr. Gleed: What was the purpose of the Interstate Commerce Commission in requiring you to keep your books in that way, charge a part of the replacement against reserve and a part against surplus that you didn't have?

A. The Interstate Commerce Commission in prescribing this accounting wanted to hew to the line that we should not make charges against any reserves unless the reserves had made the proper allowance and when the reserve didn't make it they wanted to provide that a charge showed elsewhere, so that after a period of years they could make a study through one of these accounts and deter-

330 mine whether the reserve was being properly treated, and, of course, if we made a lot of charges against a reserve that

had not been provided for in that reserve after a while the reserve would be of such a small amount that a study from the reserve in its relation to what should be reserved could not probably be made without further analysis of these charges that were previously realized that should go to surplus at this time.

Q. What did you say was the amount of that real reserve after making those deductions at the end of——

A. At December 31st, 1915, the reserve would have been $1,473,000.

Q. And what per cent was that of the total plant you had in round numbers?

A. It would be about 6.8%.

Q. Now, you say the company did not earn any dividend for 1915. It was operating in two states, Kansas and Missouri, wasn't it?

A. Yes, sir.

Q. It would be possible that the company was doing pretty well in Missouri but losing money in Kansas. What was the fact—or take 1916, if you have the facts?

A. The last report I saw where such a division was made showed—and that report was for a period ending June 30, 1916—showed a loss in Missouri of $35,000 and a profit in Kansas of about $200,000.

Q. In other words, the company was losing money in Missouri and making a little in Kansas?

A. Yes, according to that report.

Q. So that for the year ending June 30th, 1916, the company—did it, you think, earn a little dividend for that year?

A. At the year ending June 30th, 1916?

Q. Yes.

A. You mean the company as a whole or in Missouri?

331 Q. The company as a whole.

A. The company as a whole for the year ending June 30th, 1916?

Q. You said it lost a certain amount in Missouri but made a certain amount in Kansas and that seemed to show a little net profit.

A. That was based upon what the books showed and not what the proper reserve would have been.

Q. That was the showing with the actual reserve that was made?

A. Yes, sir.

Q. Well, now, do you feel sure that the company is not making any money in Missouri right now?

A. From the last report which was dated the middle of last year I am quite positive; and rates have not been raised in great enough amount that would show any material profit if any at all in the State of Missouri.

The reason that the Missouri & Kansas Telephone Company has not been earning any money is because the general level of rates has been too low.

Now in 1906 the company lost $120,000, so it had no earnings that it could re-invest in its business in that year, and it made nothing in the way of reserve for depreciation that year. It only

took care of what it had to replace and its current maintenance. In 1907 it showed a net profit in that year of $19,000 and made no reserve, so in reality it made no net profit of that amount. But now that $29,000, having not been paid out in the way of dividends nor interest charges, stayed in the treasury and was used in the business. It is a small amount, but it was used in the business, probably for extensions, or it may have passed into some of the working assets in the way of working capital. In the year 1908 without reserving a penny for depreciation the company lost $270,000, and in 1909 with only $28,000 reserved for depreciation, and I will say that that reserve was only to take care of what they had estimated they would replace or repair that year and it happened to be the estimate unquestionably was carried through, showed a loss in that year of $21,000. In the year 1910 the company began its present-day accounting. We had prior to the system promulgated by the Interstate Commerce Commission a system of accounting very similar to that we are now following, and especially is that true with regard to our reserve for replacements. In that year we received $468,000 and had a net profit of $144,000.

Now, beginning with 1911 the company reserved all it had left after paying interest, which left nothing then that passed into their surplus account, and after paying all its expenses, including
332 interest on its borrowed money, they had $261,000 left which they credited to the reserve for depreciation, and that was true in 1912 and so on until 1916.

Now, the surplus account was decreased, as mentioned here, by this operating deficit from year to year and the result was that at the close of 1916 we had a deficit, instead of a surplus, of $604,329. Now, that is largely due to the fact that under our present accounting the Interstate Commerce Commission requires where we make replacements of property and a reserve has not been provided for those replacements that we cannot charge it to our reserve that we do have, but we must charge it against our surplus account.

Now, to make that clear: So that in the year 1916 we took out $40,000 worth of property and we estimated that it lived ten years on an average, or there should have been provided $4,000 a year. Now, in the accounting we began in 1913 we would provide in our reserve in 1913, 1914, 1915 and 1916 to take care of that loss. Then we could only charge four years, or $16,000, against the reserve, and the other $24,000 would have to be charged against the surplus account, so that accounts for the surplus really being a deficit.

Commissioner Flad:

Q. Your reserve doesn't indicate necessarily what each item you are providing, what is its age?

A. No, but we have had to assume that beginning in 1913 where we didn't have any reserve, that we began our reserve accounting in this company at that time. Prior to that time we had no reserve to charge it against. Then we had to go to surplus.

333 The figures hereinafter set forth, apply exclusively to the Missouri property of the Southwestern Company, and do not apply unless expressly so stated to the Southwestern Company's properties in Arkansas and Kansas.

3. Value:

(*a*) The witnesses of the Southwestern Company testified that the original book cost of the Southwestern Company's property in the State as a whole, as of June 30, 1919, was $22,888,943.00. This is an actual and not an estimated figure.

The witnesses of the Southwestern Company testified that the prorated book cost, as of June 30, 1919, of (*a*) the Caruthersville exchange, was $37,974.00, (*b*) the St. Louis exchange was $11,046,148.00, and (*c*) the Springfield exchange was $863,392.00. This is an estimated book cost. The books are not kept by exchanges, but are kept for the State as a whole.

The books are kept according to the rules of the Interstate Commerce Commission and the Missouri Public Service Commission. In this connection the accountant testified:

"Q. Mr. Scott, I thought you told me yesterday that under Interstate Commerce accounting the purchased property had to go on to the book account, book cost account, at what we paid for it, and you told me that I misunderstood your answer; what was your answer, and what is the fact?

A. My answer was that property purchased must go into the asset accounts of the company at its cost.

Q. At what we paid?

A. At what we paid. There is a difference between our asset accounts and what you call our book cost account. If, for instance, we buy a piece of property for $100,000, we make an appraisal of it; that property may be appraised at $90,000, physical property,

334 the value of the physical property less depreciation; the value to the company in its condition at the time of the purchase. According to the instruction of the Interstate Commerce Commission we can only put into our book cost account, our plant accounts, the $90,000.00; the $10,000 additional amount which we pay goes into the intangible account. I could read you from the uniform system of accounts.

Q. If not too long; well, give the page of it.

A. It is a very short paragraph; this is section 13, on page 33 (reading): 'Plant and Equipment and Other Property Purchased. When any property in the form of a going or completed plant is purchased an appraisal of the property so acquired should be made and the different constituent elements of the plant and equipment, if any, or other property acquired, should be appraised at their structural value; that is to say, at the estimated cost of replacement, or reproduction, less deterioration to the then existing conditions through wear and tear, obsolescence and inadequacy. If the actual money value of the consideration given for the plant or other property was at the time of the acquisition in excess of such an appraised value,

the excess should be charged to Account 204. Other Intangible Capital, and the appraised values of the constituent elements should be charged to appropriate fixed capital accounts, as hereinafter designated.' It goes on further (reading): 'If the actual money value of the consideration given was not in excess of such appraised value, such actual money value should be distributed through the said accounts in proportion to the said appraised value of the constituent elements appropriate to the respective accounts.' In other
335 words, if we buy a piece of property—I will reverse the condition—for $90,000, which appraised at $100,000, we can only put into our capital accounts, into our physical property accounts, $90,000 and our appraisal must be scaled down to $90,000. That is all there is of that.

Q. That is the practice that you follow?

A. That is our practice; yes, sir.

Q. And what is your total intangible capital account at this date?

A. The total intangible account of the Southwestern Bell Telephone Company for the entire system is $62,000."

In commenting upon Exhibit 7 which is the statement of property located in Missouri as carried on the books of the Southwestern Company as of June 30, 1919, the Southwestern Company's accountant testified:
336 Exhibit 7 is the physical property as shown by the books of the company, the accumulated totals as shown by the books after taking out properties gone out of use, truly representing the actual cost of the plant on hand and in use June 30th, 1919.

A. This is intended to show the cost or original cost of the property which we now have or did have on June 30, 1919.

Q. Not what you had at some former time, but the property actually in use on the 30th day of June, 1919?

A. Yes, sir; that is right, Mr. Gleed.

Com. Flad: That is the actual price paid for it?

A. As shown by the record, yes, sir.

Since January 1st, 1913, the books have been kept in accordance with the directions of the Interstate Commerce Commission, and for a number of years prior to that time the same system was used before it was prescribed by the Interstate Commerce Commission. The books are as accurate as it is possible for human beings to keep them, there being present always, of course, the human element and the likelihood of making small mistakes. However, the mistakes would be apt "to be an offsetting operation, a give-and-take operation, if you want to call it, so that your error, if any exists, would be of small amount."

The amount which he set up on Exhibit 7 for working capital is a proper economical amount. "We limit our working capital to a minimum." Up to the present time when the company needed more money it borrowed it and it borrowed most of the money needed from the American Telegraph & Telephone Company.

Q. Your doubt comes as to what?

A. The fact that you are dealing with a human element, it is not possible, it is not probable that you can maintain a current record, cumulative record for thirty odd years and not have some errors in it.

Q. Do you think it is too small or too large; the possibilities of error, would they about equal each way?

A. I would think there is very apt to be an offsetting operation, a give and take operation, if you want to call it, so that your error if any exists would be of small amount.

Q. Comparatively small per cent?

A. Very small fraction.

An exhibit showing the plant account for the State of Missouri, with Kansas City and Independence excluded, was introduced in evidence as Exhibit 16, and is as follows:

337

EXHIBIT 16.

Southwestern Bell Telephone Company (Mo.).

Statement of Property Located in State of Missouri, Excluding Kansas City and Independence, as Carried on the Books of the Company June 30, 1919.

Plant.	Item.	Amount.
Land		$605,155
Buildings		1,092,627
Central Office Equipment		3,601,350
Station Apparatus		975,837
Station Installation		642,146
Interior Block Wire		71,586
Private Branch Exchanges		395,898
Booths and Special Fittings		39,212
Pole Lines		5,026,717
Aerial Cable		2,234,424
Aerial Wire		3,236,581
Underground Conduit		1,100,161
Underground Cable		2,254,892
Submarine Cable		22,949
Right of Way		127,149
Interest during Construction		49,948
Total Plant		$21,476,632

Other Plant Assets.

Supplies	$375,139
Office Furniture and Fixtures	159,840
General Store Equipment	7,105
Stable and Garage Equipment and Tools	194,182
Total Other Plant Assets	$736,266
Working Capital excluding Supplies	$676,045
Total Plant, Supplies, Equipment and Working Capital	$22,888,943

He has estimated and ascertained the earnings and expenses and the net results of the operations of all the property of the Southwestern Bell Telephone Company in Missouri, except Kansas City and Independence, and the ratio that that bears to the plant account, with the Independence and Kansas City exchange plants excluded. This statement was introduced in evidence as Exhibit 17, and is as follows:

338 Q. Do you know any other better evidence of the original cost of the plant of the Southwestern Bell Telephone Company than this plant account?

A. We have no better record, no better way of getting at it. Our books are our only source of that information.

Q. I suppose as to now and then an item you might get better evidence? That is to say, a particular switchboard, you might find the bill that you paid for that particular switchboard, and that would be perhaps better evidence if there was any conflict on that one item?

A. If your switchboard was so marked that you could identify it and track it down, or as in the case of a parcel of land which could be readily traced, you could get the actual cost.

Q. It would not help you as to the total?

A. No, sir; nor as to the many items which go to make up the total plant.

Q. This is the only practical evidence as to the total cost of our plant?

A. That is the only basis we have for determining the cost of the property we have in the State of Missouri.

Q. Of course an engineer could examine it all, enumerate it, and find out as near as he could when it was bought, and make an estimate as to what it cost. But have we any other recourse except those two?

A. No.

Exhibit 19.

Southwestern Bell Telephone Company, State of Missouri, Excluding Kansas City and Independence.

Summary of Investment and Income.

Basis of Books.

Total Plant and Equipment, June 30, 1919	$21,837,759.00
Working Capital	1,051,184.00
Total	$22,888,943.00
Balance Net Income for Depreciation and Return for four months ended August 31, 1919	$889,023.00
Per cent Balance Net Income for Depreciation and Return	11.65%

Note.—Strike expense was not included in expenses in arriving at balance net income.

In Exhibit 19 all of the strike expense is excluded. This exhibit shows the actual revenues for May, June, July and August, 1919. If these four months are fairly indicative, the year's revenue would be three times the amount shown, and the net income, on an annual basis, would be 11.65 per cent of the cost of the property as shown by the company's books. The service connection, installation and move charge revenue is included in this statement, together with the exchange rates, which were put into effect May 1st, 1919, and the revenue from toll rates put into effect June 14th, 1919, is reflected for part of June and all of July and August; $889,023.00 is the balance available for depreciation and return.

339 Southwestern Bell Telephone Company.

Entire Property in State of Missouri, Excluding Kansas City and Independence.

Valuation Data.

(1) Reproduction Cost New	$35,100,471
(2) Reproduction Cost New Less Depreciation	31,355,278
(3) Cost as per books	22,888,943
(4) Commission Valuation plus net additions	Not determined.

Income and Expense.

Net Income before deducting depreciation, four months, May, June, July and August, 1919 ..... $889,023

Per cent on (4) Annual Basis..... .....
Per cent on (3) Annual Basis..... 11.65%
Per cent on (2) Annual Basis..... 8.51%

Robinson's Rate of Reserve for Depreciation.. 6.0388%

Change in Rates.

See individual exchange sheets.

Miscellaneous.

Reproduction Cost New based on inventories and valuations made as of various dates.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

340 Armstrong Exchange.

Valuation Data.

(1) Repreduction Cost New..... $19,370
(2) Reproduction Cost New, less Depreciation..... 17,497
(3) Prorated book cost 12,883
(4) Commission Valuation plus net additions....Not determined.

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919 ..... †$114

Per cent on (4) Annual Basis..... ....
Per cent on (3) " " ..... †2.65%
Per cent on (2) " " ..... †1.96%

Robinson's Rate of Reserve for Depreciation..... 10.277%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall.	$1.50	Individual Line—Wall	$2.50
" " —Desk.	1.50	" " —Desk.	2.75
Rural Stations, each...	1.50	Rural Stations, each..	2.00
Service Stations, each...	.25	Service Stations, each..	1.00

†Indicates loss.

Residence:		Residence:	
Individual Line—Wall.	1.25	Individual Line—Wall.	1.50
" " —Desk.	1.25	" " —Desk.	1.75
Rural Stations, each...	1.50	Rural Stations, each...	1.50
Service Stations, each...	.25	Service Stations, each..	.50

Miscellaneous.

Reproduction Cost, New, based on Field Inventory and Appraisal made as of March 31, 1919, brought up to date by adding Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

341 Bismarck Exchange.

Valuation Date.

(1) Reproduction Cost New	$11,571.00
(2) Reproduction Cost New Less Depreciation	10,170.00
(3) Prorated book cost	7,683.00
(4) Commission Valuation plus net additions	Not determined.

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919	†481
Per cent on (4) Annual Basis	
Per cent on (3) " "	†18.78%
Per cent on (2) " "	†14.19%
Robinson's Rate of Reserve for Depreciation...	8.976%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall.	$2.00	Individual Line—Wall	$2.50
" " —Desk.	2.25	" " —Desk	2.75
Rural Stations, each...	1.50	Rural Stations, each..	2.00
Service Stations, each..	.50	Service Stations, each.	1.00
Residence:		Residence:	
Individual Line—Wall.	1.00	Individual Line—Wall	1.50
" " —Desk.	1.25	" " —Desk	1.75
Rural Stations, each...	1.50	Rural Stations, each..	1.50
Service Stations, each..	.50	Service Stations, each..	.50

†Indicates loss.

Miscellaneous.

Reproduction Cost New of the Physical Property in this Exchange was determined as follows:

Nine exchanges of similar physical characteristics in which we had recently made field inventories and appraisals were used as a measure of construction cost per station in service, that is, the total reproduction cost new for these nine exchanges was divided by the total number of stations in service in the exchanges. The construction cost per station thus obtained was applied to the total number of stations in this exchange.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

342 Aurora Exchange.

Valuation Data.

(1) Reproduction Cost New	$60,253.00
(2) Reproduction Cost New, less depreciation	55,388.00
(3) Prorated book cost	40,125.00
(4) Commission valuation, plus net additions	Not determined.

Income and Expense.

Net Income before deducting depreciation, four months, May, June, July and August, 1919	$469.00
Per cent on (4) Annual Basis	....
Per cent on (3) " "	3.51%
Per cent on (2) " "	2.54%
Robinson's Rate of Reserve for Depreciation	8.724%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line	$3.00	Individual Line	$3.00
Rural Stations, each	1.50	Rural Stations, each	2.00
Service Stations, each	.50	Service Stations, each	1.00
Residence:		Residence:	
Individual Line	2.00	Individual Line	2.00
Two Party	1.75	Two Party	1.75
Rural Stations, each	1.50	Rural Stations, each	1.50
Service Stations, each	.50	Service Stations, each	.50

Miscellaneous.

Reproduction Cost New, based on field inventory and appraisal made as of April 15, 1918, brought up to date by adding net additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

343 Bloomfield Exchange.

Valuation Data.

(1) Reproduction Cost, New	$23,394
(2) Reproduction Cost, New, less Depreciation	19,616
(3) Prorated Book Cost	15,533
(4) Commission Valuation plus Net Additions	Not determined.

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919	$398
Per cent on (4) Annual Basis	....
" " " (3) " "	7.69%
" " " (2) " "	6.09%
Robinson's Rate of Reserve for Depreciation	8.976%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall.	$2.25	Individual Line—Wall	$2.50
" " —Desk.	2.25	Two Party Line—Desk	2.75
Rural Station, each....	1.50	Rural Stations, each..	2.00
Service Stations, each...	.25	Service Stations, each.	1.00
Residence:		Residence:	
Individual Line—Wall.	$1.25	Individual Line—Wall	$1.50
" " —Desk.	1.50	" " —Desk	1.75
Rural Stations, each...	1.50	Rural Stations, each..	1.50
Service Stations, each..	.25	Service Stations each.	.50

Miscellaneous.

Reproduction Cost New of the Physical Property in this Exchange was determined as follows:

Nine exchanges of similar physical characteristics in which we had recently made field inventories and appraisals were used as a measure of construction cost per station in service, that is, the total

reproduction cost new for these nine exchanges was divided by the total number of stations in service in the exchanges. The construction cost per station thus obtained was applied to the total number of stations in this exchange.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

344 Blue Springs Exchange.

Valuation Data.

(1) Reproduction Cost, New	$16,727
(2) Reproduction Cost, New, less Depreciation	14,026
(3) Prorated Book Cost	11,107
(4) Commission Valuation Plus Net Additions	Not determined

Income and Expense.

Net Income before deducting depreciation 4 months, May, June, July and August, 1919	*$8.00
Per cent on (4) Annual Basis	
Per cent of (3) " "	* .22%
Per cent on (2) " "	* .18%
Robinson's Rate of Reserve for Depreciation	8.976%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall	$1.75	Individual Line—Wall	$2.50
" " —Desk	2.00	" " —Desk	2.75
Rural Stations, each	1.50	Rural Stations, each	2.00
Service Stations, each	.25	Service Stations, each	1.00
Residence:		Residence:	
Individual Line—Wall	$1.25	Individual Line—Wall	$1.50
" " —Desk	1.50	" " —Desk	1.75
Four Party—Wall	1.00		
" " —Desk	1.25		
Rural Stations, each	1.50	Rural Stations, each	1.50
Service Stations, each	.25	Service Stations, each	.50

Miscellaneous.

Reproduction Cost New of the Physical Property in this Exchange was determined as follows:

*Indicates loss.

Nine exchanges of similar physical characteristics in which we had recently made field inventories and appraisals were used as a measure of construction cost per station in service, that is, the total reproduction cost new for these nine exchanges was divided by the total number of stations in service in the exchanges. The construction cost per station thus obtained was applied to the total number of stations in this exchange.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

345 Brookfield Exchange.

Valuation Data.

(1) Reproduction Cost, New	$129,510
(2) Reproduction Cost, New, Less Depreciation	117,701
(3) Prorated Book Cost	86,177
(4) Commission Valuation plus net additions	Not determined

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919	$2,385
Per cent on (4) Annual Basis	
Per cent on (3) " "	8.30%
Per cent on (2) " "	6.08%
Robinson's Rate of Reserve for Depreciation	8.408%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall	$2.50	Individual Line—	
Individual Line—Desk	2.75	Wall or Desk	$3.50
Rural Stations, each	1.50	Rural Stations, each	2.00
Service Stations, each	.33⅓	Service Stations, each	1.00
Residence:		Residence:	
Individual Line—Wall	$1.50	Individual Line—	
Individual Line—Desk	1.75	Wall or Desk	$2.00
Two-Party Line—Wall	1.25	Two-Party Line—	
Two-Party Line—Desk	1.50	Wall or Desk	1.75
Rural Stations, each	1.50	Rural Stations, each	1.50
Service Stations, each	.33⅓	Service Stations, each	.50

Miscellaneous.

Reproduction Cost, New, based on Field Inventory and Appraisal made as of June 1, 1918, brought up to date by adding Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14.

346 Campbell Exchange.

Valuation Data.

(1) Reproduction Cost, New	$23,646
(2) Reproduction Cost, New, less Depreciation	18,873
(3) Prorated book cost	15,610
(4) Commission Valuation plus net addition	Not determined

Income and Expense.

Net Income before deducting depreciation, four months, May, June, July and August, 1919	$6.10
Per cent on (4) Annual Basis	
Per cent on (3) " "	11.72%
Per cent on (2) " "	9.69%
Robinson's Rate of Reserve for Depreciation	8.976%

Change in Monthly Rates.

Prior to May 1, 1919.

Business:

Individual Line—Wall	$2.25
" " —Desk	2.25
Rural Stations, each	1.50
Service Stations, each	.25

Residence:

Individual Line—Wall	1.25
" " —Desk	1.50
Rural Stations, each	1.50
Service Stations, each	.25

Subsequent to May 1, 1919.

Business:

Individual Line—Wall	$2.75
Individual Line—Desk	3.00
Rural Stations, each	2.00
Service Stations, each	1.00

Residence:

Individual Line—Wall	1.75
Individual Line—Desk	2.00
Rural Stations, each	1.50
Service Stations, each	.50

Miscellaneous.

Reproduction Cost, New, of the Physical Property in this Exchange was determined as follows:

Nine exchanges of similar physical characteristics in which we had recently made field inventories and appraisals were used as a measure of construction cost per station in service, that is, the total

reproduction cost, new, for these nine exchanges was divided by the total number of stations in service in the exchanges. The construction cost per station thus obtained was applied to the total number of stations in this exchange.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

347 Carrollton Exchange.

Valuation Data.

(1) Reproduction Cost, New	$168,042
(2) Reproduction Cost New Less Depreciation	149,991
(3) Prorated Book Cost	104,956
(4) Commission Valuation plus net additions	Not determined

Income and Expense.

Net Income before Deducting Depreciation, 4 months, May, June, July and August, 1919	2,292
Per cent on (4) Annual Basis	
Per cent on (3) " "	6.55%
Per cent on (2) " "	4.58%
Robinson's Rate of Reserve for Depreciation	7.9929%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall.	$2.50	Individual Line—Wall or Desk	$3.50
" " —Desk.	2.75		
Rural Stations, each	1.50	Rural Stations, each	2.00
Service Stations, each	.50	Service Stations, each	1.00
Residence:		Residence:	
Individual Line—Wall.	1.25	Individual Line—Wall or Desk	2.00
" " —Desk.	1.50		
Rural—Grounded	1.00	Rural—Grounded	1.25
" —Metallic	1.50	" —Metallic	1.50
Service Stations, each	.50	Service Stations, each	.50

Miscellaneous.

Reproduction Cost New based on Field Inventory and Appraisal made as of September 30, 1918, brought up to date by adding Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

348 Caruthersville Exchange.

Valuation Data.

(1) Reproduction Cost New	$57,192
(2) Reproduction Cost New less Depreciation	52,574
(3) Prorated Book Cost	37,974
(4) Commission Valuation plus net Additions	30,992

Income and Expense.

Net Income before deducting depreciation, 4 months, May June, July and August, 1919	None
Per cent on (4) Annual Basis	
Per cent on (3) " "	
Per cent on (2) " "	
Robinson's Rate of Reserve for Depreciation	8.829%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall.	$2.50	Individual Line—Wall	$2.75
" " —Desk.	2.50	" " —Desk	3.00
Rural Stations, each...	1.50	Rural Stations, each...	2.00
Service Stations, each..	.50	Service Stations, each	1.00
Residence:		Residence:	
Individual Line—Wall.	1.50	Individual Line—Wall	1.75
" " —Desk.	1.75	" " —Desk	2.00
Rural Stations, each...	1.50	Rural Stations, each..	1.50
Service Stations, each..	.50	Service Stations, each	.50

Miscellaneous.

Reproduction Cost New, based on Field Inventory and Appraisal made as of September 30, 1913, plus Net Additions to December 31, 1916, and the total increased 25%. To this total Net Additions were added to June 30, 1919.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

349 Chaffee Exchange.

Valuation Data.

(1) Reproduction Cost New	$19,352
(2) Reproduction Cost New less Depreciation	17,732
(3) Prorated Book Cost	12,864
(4) Commission Valuation plus net additions	Not determined

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919	$279
Per cent on (4) Annual Basis	
Per cent on (3) " "	6.51%
Per cent on (2) " "	4.72%
Robinson's Rate of Reserve for Depreciation	8.750%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall.	$2.00	Individual Line—Wall	$2.50
" " —Desk.	2.00	" " —Desk	2.75
Rural Stations, each...	1.50	Rural Stations, each..	2.00
Service Stations, each..	.50	Service Stations, each.	1.00
Residence:		Residence:	
Individual Line—Wall.	1.50	Individual Line—Wall	1.50
" " —Desk.	1.75	Two Party " —Desk	1.75
Rural Stations, each...	1.50	Rural Stations, each..	1.50
Service Stations, each..	.50	Service Stations, each.	.50

Miscellaneous.

Reproduction Cost New based on Field Inventory and Appraisal made as of June 9, 1918, brought up to date by adding Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

350 Charleston Exchange.

Valuation Data.

(1) Reproduction Cost New	$60,919
(2) Reproduction Cost New Less Depreciation	53,642
(3) Prorated book cost	39,742
(4) Commission Valuation plus net additions	Not determined

Income and Expense.

Net — before deducting depreciation, 4 months, May, June July and August, 1919..... $389

Per cent on (4) Annual Basis.....
Per cent on (3) Annual Basis..... 2.94%
Per cent on (2) Annual Basis..... 2.18%
Robinson's Rate of Reserve for Depreciation..... 8.0565%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall.	$2.00	Individual Line—Wall	$2.75
" " —Desk.	2.00	" " —Desk	3.00
Rural Stations, each...	1.50	Rural Stations, each..	2.00
Service " " ...	.50	Service " " ..	1.00
Residence:		Residence:	
Individual Line—Wall.	1.50	Individual Line—Wall	1.75
" " —Desk.	1.75	" " —Desk	2.00
Rural Stations, each...	1.50	Rural Stations, each..	1.50
Service " " ...	.50	Service " " ..	.50

Miscellaneous.

Reproduction Cost New based on Field Inventory and Appraisal made as of March 31, 1918, brought up to date by adding Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

351

Chillicothe Exchange.

Valuation Data.

(1) Reproduction Cost, New..... $214,973
(2) Reproduction Cost, New, less Depreciation..... 194,584
(3) Prorated book cost..... 140,469
(4) Commission Valuation, plus Net Additions....Not determined

Income and Expense.

Net Income before deducting Depreciation, 4 months, May, June, July and August, 1919..... $3,808

Per cent on (4) Annual Basis.....
Per cent on (3) " "
Per cent on (2) " " 8.13%
Robinson's Rate of Reserve for Depreciation.... 5.87%
7.767%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall	$2.50	Individual Line—	
" " —Desk	2.75	Wall or Desk	$4.00
Rural Stations, each	1.50	Rural Stations, each	2.25
Service Stations, each	.50	Service Stations, each	1.00
Residence:		Residence:	
Individual Line—Wall	1.50	Individual Line—	
" " —Desk	1.75	Wall or Desk	2.00
Two Party Line—Wall	1.25	Two Party Line—	
" " " —Desk	1.50	Wall or Desk	1.75
		Four Party Line—	
Rural Stations, each	1.50	Wall or Desk	1.50
Service Stations, each	.50	Rural Stations, each	1.50
		Service Stations, each	.50

Miscellaneous.

Reproduction Cost, New, based on Field Inventory and Appraisal made as of February 28, 1918, brought up to date by adding Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

352 Clayton Exchange.

Valuation Data.

(1) Reproduction Cost, New	$157,652
(2) Reproduction Cost, New, less Depreciation	137,335
(3) Prorated book cost	104,677
(4) Commission Valuation, plus net additions	Not determined

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919	$3,040
Per cent on (4) Annual Basis	
Per cent on (3) " "	8.71%
Per cent on (2) " "	6.64%
Robinson's Rate of Reserve for Depreciation	8.114%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line.....	$3.00	Individual Line.....	$3.50
Two Party Line.....	2.50		
Rural Stations, each...	2.50	Rural Stations, each.	2.50
Service Stations, each..	.50	Service Stations, each.	1.00
Residence:		Residence:	
Individual Line.....	2.00	Individual Line.....	2.00
Two Party.....	1.75	Two Party.....	1.75
Four Party.....	1.50	Four Party.....	1.50
Rural Stations, each...	2.00	Rural Stations, each.	2.00
Service Stations, each..	.50	Service Stations, each.	.50

Miscellaneous.

Reproduction Cost, New, based on Field Inventory and Appraisal made as of December 31, 1913, plus Net Additions to December 31, 1916, and the total increased 25%. To this total Net Additions were added to June 30, 1919.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

353 Dexter Exchange.

Valuation Data.

(1) Reproduction Cost, New	$38,486.00
(2) Reproduction Cost, New, less depreciation	32,271.00
(3) Prorated book cost	25,554.00
(4) Commission Valuation, plus net additions	Not determined

Income and Expense.

Net Income before deducting depreciation, four months, May, June, July and August, 1919	†$612.00
Per cent on (4) Annual Basis	.....
Per cent on (3) " "	†7.18%
Per cent on (2) " "	†5.69%
Robinson's Rate of Reserve for depreciation ..	8.976%

†Indicates loss.

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall	$2.25	Individual Line—Wall	$2.75
" " —Desk	2.25	Two Party Line—Desk	3.00
Rural Stations, each	1.50	Rural Station, each	2.00
Service Stations, each	.25	Service Stations, each.	1.00
Residence:		Residence:	
Individual Line—Wall	1.25	Individual Line—Wall	1.75
" " —Desk	1.50	Two Party—Desk	2.00
Rural Stations, each	1.50	Rural Stations, each	1.50
Service Stations, each	.25	Service Stations, each.	.50

Miscellaneous.

Reproduction Cost, New, of the Physical Property in this Exchange was determined as follows:

Nine exchanges of similar physical characteristics in which we had recently made field inventories and appraisals were used as a measure of construction cost per station in service; that is, the total reproduction cost, new, for these nine exchanges was divided by the total number of stations in service in the exchanges. The construction cost per station thus obtained was applied to the total number of stations in this exchange.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

354 East Prairie Exchange.

Valuation Data.

(1) Reproduction Cost, New	$12,200
(2) Reproduction Cost, New, less Depreciation	9,737
(3) Prorated Book Cost	8,101
(4) Commission Valuation plus Net Addition	Not determined

Income and Expense.

Net Income before deducting depreciation, 4 months, May June, July and August, 1919	†$25.00
Per cent on (4) Annual Basis	
" " " (3) " "	†.93%
" " " (2) " "	†.77%
Robinson's Rate of Reserve for Depreciation	8.976%

†Indicates loss.

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall	$2.25	Individual Line—Wall	$2.50
" " —Desk	2.25	Individual Line—Desk	2.75
Rural Stations, each	1.50	Rural Stations, each	2.00
Service Stations, each	.50	Service Stations, each.	1.00
Residence:		Residence:	
Individual Line—Wall	1.25	Individual Line—Wall	1.50
" " —Desk	1.50	Individual Line—Desk	1.75
Rural Stations, each	1.50	Rural Stations, each	1.50
Service Stations, each	.50	Service Stations, each.	.50

Miscellaneous.

Reproduction Cost, New, of the Physical Property in this Exchange was determined as follows:

Nine exchanges of similar physical characteristics in which we had recently made field inventories and appraisals, were used as a measure of construction cost per station in service, that is, the total reproduction cost, new, for these nine exchanges was divided by the total number of stations in service in the exchanges. The construction cost per station thus obtained was applied to the total number of stations in this exchange.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

355 Fayette Exchange.

Valuation Data.

(1) Reproduction Cost, New	$90,131
(2) Reproduction Cost, New, Less Depreciation	80,682
(3) Prorated Book Cost	56,377
(4) Commission Valuation plus net additions	Not Determined

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919	†$513
Per cent on (4) Annual Basis	.....
Per cent on (3) Annual Basis	†2.73%
Per cent on (2) Annual Basis	†1.91%
Robinson's Rate of Reserve for Depreciation	8.317%

†Indicates loss.

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall	$2.50	Individual Line—Wall	$2.75
" " —Desk	2.50	Individual Line—Desk	3.00
Rural Stations, each	1.50	Rural Stations, each	2.00
Service Stations, each	.25	Service Stations, each.	1.00
Residence:		Residence:	
Individual Line—Wall	1.50	Individual Line—Wall	1.75
" " —Desk	1.50	Individual Line—Desk	2.00
Rural Stations, each	1.50	Rural Stations, each	1.50
Service Stations, each	.25	Service Stations, each.	.50

Miscellaneous.

Reproduction Cost, New, based on Field Inventory and Appraisal made as of March 31, 1919, brought up to date by adding Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

356 Ferguson Exchange.

Valuation Data.

(1) Reproduction Cost, New	$70,828
(2) Reproduction Cost, New, Less Depreciation	63,957
(3) Prorated Book Cost	47,070
(4) Commission Valuation plus net additions	Not determined

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919	$319
Per cent on (4) Annual Basis	
Per cent on (3) " "	2.03%
Per cent on (2) " "	1.50%
Robinson's Rate of Reserve for Depreciation	8.280%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line	$3.00	Individual Line	$3.00
Two Party Line	2.50		
Rural Stations, each	2.50	Rural Stations, each	2.50
Service Stations, each	.50	Service Stations, each.	1.00
Residence:		Residence:	
Individual Line	2.00	Individual Line	2.00
Two Party	1.75	Two Party	1.75
Four Party	1.50	Four Party	1.50
Rural Stations, each	2.00	Rural Stations, each	2.00
Service Stations, each	.50	Service Stations, each.	.50

Miscellaneous.

Reproduction Cost, New, based on inventory made from accurate office records.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

357 Glasgow Exchange.

Valuation Data.

(1) Reproduction Cost, New	$53,120
(2) Reproduction Cost, New, less Depreciation	43,243
(3) Prorated Book Cost	30,175
(4) Commission Valuation plus net additions	Not determined

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919	†$145
Per cent on (4) Annual Basis	
Per cent on (3) " "	†1.44%
Per cent on (2) " "	†1.00%
Robinson's Rate of Reserve for Depreciation	7.845%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall	$2.00	Individual Line—Wall	$2.75
" " —Desk	2.00	" " —Desk	3.00
Rural Stations, each	1.50	Rural Stations, each	2.00
Service Stations, each	.25	Service Stations, each.	1.00

†Indicates loss.

Residence:		Residence:	
Individual Line—Wall.	1.25	Individual Line—Wall	1.75
" " —Desk.	1.25	" " —Desk	2.00
Rural Stations, each ...	1.50	Rural Stations, each..	1.50
Service Stations, each...	.25	Service Stations, each.	.50

Miscellaneous.

Reproduction Cost, New based on Field Inventory and Appraisal made as of March 31, 1919, brought up to date by adding Net additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

358 Hannibal Exchange.

Valuation Data.

(1) Reproduction Cost New	$489,037
(2) Reproduction Cost New Less Depreciation	458,125
(3) Prorated book cost	315,915
(4) Commission Valuation plus net additions	Not determined

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919	11,716
Per cent on (4) Annual Basis	
Per cent on (3) " "	11.13%
Per cent on (2) " "	7.67%
Robinson's Rate of Reserve for Depreciation	6.902%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line	$3.00	Individual Line Wall or Desk	$4.50
Rural Stations, each...	1.50	Rural Stations, each.	2.25
Service Stations, each..	.35	Service Stations, each	1.00
Residence:		Residence:	
Individual Line—Wall.	2.00	Individual Line—Wall or Desk	2.50
" " —Desk.	2.25		
Two Party—Wall	1.50	Two Party—Wall or Desk	2.00
" " —Desk	1.75		
Rural Stations, each...	1.50	Rural Stations, each.	1.50
Service Stations, each..	.35	Service Stations, each	.50

Miscellaneous.

Reproduction Cost New based on Field Inventory and Appraisal made as of May 15, 1918, brought up to date by adding Net additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

359 Higbee Exchange.

Valuation Data.

(1) Reproduction Cost New	$13,961
(2) Reproduction Cost New, less Depreciation	12,834
(3) Prorated Book Cost	9,270
(4) Commission Valuation, plus net additions	Not determined

Income and Expense.

Net Income before deducting depreciation, 4 months, May June, July and August, 1919	$10
Per cent on (4) Annual Basis	
Per cent on (3) " "	.32%
Per cent on (2) " "	.24%
Robinson's Rate of Reserve for Depreciation	8.976%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall.	$2.00	Individual Line—Wall	$2.50
" " —Desk.	2.00	" " —Desk	2.75
Rural Stations, each...	1.50	Rural Stations, each..	2.00
Service Stations, each..	.25	Service Stations, each.	1.00
Residence:		Residence:	
Individual Line—Wall.	1.00	Individual Line—Wall	1.50
" " —Desk.	1.00	" " —Desk	1.75
Rural Stations, each...	1.50	Rural Stations, each..	1.50
Service Stations, each..	.25	Service Stations, each.	.50

Miscellaneous.

Reproduction Cost New of the Physical Property in this Exchange was determined as follows:

Nine exchanges of similar physical characteristics in which we had recently made — filed inventories and appraisals were used as a meas-

ure of construction cost per station in service, that is the total reproduction cost new for these nine exchanges was divided by the total number of stations in service in the exchanges. The construction cost per station thus obtained was applied to the total number of stations in this exchange.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

360 Kirksville Exchange.

Valuation Data.

(1) Reproduction Cost, New	$139,290
(2) Reproduction Cost, New less Depreciation	122,978
(3) Prorated Book Cost	92,694
(4) Commission Valuation Plus Net Additions	Not Determined

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919	3,640
Per cent on (4) Annual Basis	
Per cent on (3) " "	11.78%
Per cent on (2) " "	8.88%
Robinson's Rate of Reserve for Depreciation	8.727%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line	$3.00	Individual Line	$3.00
Rural Stations, each	1.50	Rural Stations, each	2.00
Service " "	.25	Service " "	1.00
Residence:		Residence:	
Individual Line	1.75	Individual Line	1.75
Rural Stations, each	1.50	Rural Stations, each	1.50
Service " "	.25	Service " "	.50

Miscellaneous.

Reproduction Cost, New, based on Field Inventory and Appraisal made as of December 1, 1917, brought up to date by adding Net Additions.

Income include service connection charges for the full period under study and increased tolls from June 14th.

361 Lamar Exchange.

Valuation Data.

(1) Reproduction Cost New	$58,100
(2) Reproduction Cost New Less Depreciation	53,415
(3) Prorated Book Cost	38,655
(4) Commission Valuation plus net additions	Not determined

Income and Expense.

Net Income before Deducting Depreciation, 4 months, May, June, July and August, 1919	206
Per cent on (4) Annual Basis	
Per cent on (3) " "	1.60%
Per cent on (2) " "	1.15%
Robinson's Rate of Reserve for Depreciation	8.607%

Change in Monthly Rates.

Prior to May 1, 1919.

Business:

Individual Line—Wall	$2.00
" " —Desk	2.25
Rural Stations, each	1.50
Service Stations, each	.25

Residence:

Individual Line—Wall	1.00
" " —Desk	1.25
Rural Stations, each	1.50
Service Stations, each	.25

Subsequent to May 1, 1919.

Business:

Individual Line—Wall	$2.50
" " —Desk	2.75
Rural Stations, each	2.00
Service Stations, each	1.00

Residence:

Individual Line—Wall	1.50
" " —Desk	1.75
Rural Stations, each	1.50
Service Stations, each	.50

Miscellaneous.

Reproduction Cost New based on Field Inventory and Appraisal made as of July 18, 1918, brought up to date by adding Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

362 Lancaster Exchange.

Valuation Data.

(1) Reproduction Cost, New	$20,321
(2) Reproduction Cost, New, less Depreciation	18,351
(3) Prorated Book Cost	13,513
(4) Commission Valuation, plus Net Additions	Not determined

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919	†$405
Per cent on (4) Annual Basis	
" " (3) " "	†8.99%
" " (2) " "	†6.63%
Robinson's Rate of Reserve for Depreciation	9.148%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall.	$2.00	Individual Line—Wall	$2.00
" " —Desk.	2.25	" " —Desk	2.25
Rural Stations, each	1.50	Rural Stations, each	2.00
Service Stations, each	.25	Service Stations, each	.70
Residence:		Residence:	
Individual Line—Wall.	$1.50	Individual Line—Wall	$1.50
" " —Desk.	1.75	" " —Desk	1.75
Rural Stations, each	1.50	Rural Stations, each	1.50
Service Stations, each	.25	Service Stations, each	.35

Miscellaneous.

Reproduction Cost, New based on Field Inventory and Appraisal made as of February 28, 1918, brought up to date by adding Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

363 Lees Summit Exchange.

Valuation Data.

(1) Reproduction Cost, New	$70,389.00
(2) Reproduction Cost, New, less depreciation	63,055.00
(3) Prorated book cost	46,857.00
(4) Commission Valuation, plus net additions	Not determined

†Indicates loss.

Income and Expense.

Net Income before deducting depreciation, four months, May, June, July and August, 1919	†$218.00
Per cent on (4) Annual Basis	.....
Per cent on (3) " "	†1.40%
Per cent on (2) " "	†1.04%
Robinson's Rate of Reserve for depreciation	9.231%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall	$2.00	Individual Line—Wall	$3.00
" " —Desk	2.25	" " —Desk	3.00
Rural Stations, each	1.50	Rural Stations, each	2.00
Service Stations, each	.25	Service Stations, each	1.00
Residence:		Residence:	
Individual Line—Wall	1.50	Individual Line—Wall or Desk	2.00
" " —Desk	1.75	Two Party—Wall or Desk	1.50
Two Party—Wall	1.00	Rural Stations, each	1.50
" " —Desk	1.25	Service Stations, each	.50
Rural Stations, each	1.50		
Service Stations, each	.25		

Miscellaneous.

Reproduction Cost, New, based on field inventory and appraisal made as of March 29, 1918, brought up to date by adding net additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

364 Malden Exchange.

Valuation Data.

(1) Reproduction Cost, New	$27,848
(2) Reproduction Cost, New, Less Depreciation	26,722
(3) Prorated book cost	18,507
(4) Commission Valuation, plus net additions	Not determined

†Indicates loss.

Income and Expense.

Net Income before deducting depreciation, 4 months May, June, July and August, 1919	$444
Per cent on (4) Annual Basis	
Per cent on (3) " "	7.20%
Per cent on (2) " "	4.98%
Robinson's Rate of Reserve for Depreciation	8.3374%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall	$2.50	Individual Line—Wall	$2.75
" " —Desk	2.75	" " —Desk	3.00
Rural Stations, each	1.50	Rural Stations, each	2.00
Service Stations, each	.25	Service Stations, each	1.00
Residence:		Residence:	
Individual Line—Wall	1.50	Individual Line—Wall	1.75
" " —Desk	1.75	" " —Desk	2.00
Rural Stations, each	1.50	Rural Stations, each	1.50
Service Stations, each	.25	Service Stations, each	.50

Miscellaneous.

Reproduction Cost, New, based on Field Inventory and Appraisal made as of August 31, 1917. This appraisal was increased 25%. To this total Net Additions were added to June 30, 1919.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

365 Marionville Exchange.

Valuation Data.

(1) Reproduction Cost, New	$17,008
(2) Reproduction Cost, New, Less Depreciation	14,108
(3) Prorated book cost	11,305
(4) Commission Valuation plus net additions	Not determined

Income and Expenses.

Net income before deducting depreciation, 4 months, May, June, July and August, 1919	$ *665
Per cent on (4) Annual Basis	
Per cent on (3) " "	*17.65%
Per cent on (2) " "	*14.12%
Robinson's Rate of Reserve for Depreciation	9.248%

*Indicates loss.

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall.	$1.50	Individual Line—Wall	$2.50
" " —Desk.	1.75	" " —Desk	2.75
Rural Stations, each...	1.50	Rural Stations, each..	2.00
Service Stations, each..	.25	Service Stations, each.	1.00
Residence:		Residence:	
Individual Line—Wall.	$1.00	Individual Line—Wall	$1.50
" " —Desk.	1.25	" " —Desk	1.75
Rural Stations, each...	1.50	Rural Stations, each..	1.50
Service Stations, each..	.25	Service Stations, each.	.50

Miscellaneous.

Reproduction Cost, New, Based on Field Inventory and Appraisal made as of January 16, 1919, brought up to date by adding Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

366 Marshall Exchange.

Valuation Data.

(1) Reproduction Cost, New	$191,708
(2) Reproduction Cost, New, Less Depreciation	180,713
(3) Prorated Book Cost	125,110
(4) Commission Valuation plus net additions	Not determined

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919	$3,732
Per cent on (4) Annual Basis	
Per cent on (3) " "	8.95%
Per cent on (2) " "	6.20%
Robinson's Rate of Reserve for Depreciation	7.511%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall.	$2.50	Individual Line—Wall or Desk.....	$3.50
" " —Desk.	2.75	Rural Stations, each..	2.00
Rural Stations, each...	1.50	Service Stations, each.	1.00
Service Stations, each..	.50		
Residence:		Residence:	
Individual Line—Wall.	$1.50	Individual Line—Wall or Desk.....	$2.00
" " —Desk.	1.75	Two Party—Wall or Desk	1.75
Rural Stations, each...	1.50	Rural Stations, each..	1.50
Service Stations, each..	.50	Service Stations, each.	.50

Miscellaneous.

Reproduction Cost, New, based on Field Inventory and Appraisal made as of December 31, 1916. This appraisal was increased 25%. To this total Net Additions were added to June 30, 1919.

Income includes service connection charges for the full period under study and increased tolls from June 14-h.

367 Mexico Exchange.

Valuation Data.

(1) Reproduction Cost, New.....	$176,854
(2) Reproduction, Cost, New, less Depreciation.....	166,835
(3) Prorated book cost.....	116,095
(4) Commission Valuation plus net additions....	Not determined

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919.....	$3,434
Per cent on (4) Annual Basis.....	
Per cent on (3) " "	8.87%
Per cent on (2) " "	6.17%
Robinson's Rate of Reserve for Depreciation....	6.940%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line.....	$2.50	Individual Line.....	$3.00
Rural Stations, each...	1.50	Rural Stations, each.	2.00
Service Stations, each..	.50	Service Stations, each.	1.00

Residence:		Residence:	
Individual Line.....	$1.50	Individual Line.....	$2.00
Two Party.....	1.25	Two Party.....	1.75
Rural Stations, each...	1.50	Rural Stations, each..	1.50
Service Stations, each..	.50	Service Stations, each.	.50

Miscellaneous.

Reproduction Cost, New, based on inventory made from accurate office records.

Income includes service connection charges for the full period under study and increased toll from June 14th.

368 Moberly Exchange.

Valuation Data.

(1) Reproduction Cost, New.....	$276,519
(2) Reproduction Cost, New, Less Depreciation.....	259,518
(3) Prorated book cost.....	173,973
(4) Commission Valuation plus net additions.....Not determined	

Income and Expense.

Net Income before deducting Depreciation, 4 months, May, June, July and August, 1919.....	$5,652
Per cent on (4) Annual Basis.....	
Per cent on (3) Annual Basis.....	9.75%
Per cent on (2) Annual Basis.....	6.53%
Robinson's Rate of Reserve for Depreciation....	6.935%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall.	$3.00	Individual Line—	
" " —Desk.	3.50	Wall or Desk.....	$4.00
Rural Stations, each...	1.50	Rural Stations, each.	2.25
Service Stations, each..	.50	Service Stations, each.	1.00
Residence:		Residence:	
Individual Line—Wall.	$1.75	Individual Line—	
" " —Desk.	2.25	Wall or Desk.....	$2.25
Two Party Line—Wall.	1.50	Two Party Line—	
Two Party Line—Desk.	2.00	Wall or Desk.....	2.00
Rural Stations, each...	1.50	Rural Stations, each.	1.50
Service Stations, each..	.50	Service Stations, each.	.50

Miscellaneous.

Reproduction Cost, New, based on Field Inventory and Appraisal made as of September 15, 1918, brought up to date by adding Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

369 Monett Exchange.

Valuation Data.

(1) Reproduction Cost New	$82,315
(2) Reproduction Cost New Less Depreciation	72,853
(3) Prorated book cost	54,816
(4) Commission Valuation plus net additions	Not determined

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August 1919	$566
Per cent on (4) Annual Basis	....
Per cent on (3) Annual Basis	3.10%
Per cent on (2) Annual Basis	2.33%
Robinson's Rate of Reserve for *Deportation*	8.666%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall	$2.50	Individual Line—Wall or Desk	$3.00
" " —Desk	2.75		
Rural Stations, each	1.50	Rural Stations, each	2.00
Service Stations, each	.25	Service Stations, each	1.00
Residence:		Residence:	
Individual Line—Wall	1.50	Individual Line—Wall or Desk	2.00
" " —Desk	1.75	Two Party—Wall or Desk	1.75
Rural Stations, each	1.50	Rural Stations, each	1.50
Service Stations, each	.25	Service Stations, each	.50

Miscellaneous.

Reproduction Cost New based on Field Inventory and Appraisal made as of May 15, 1918, brought up to date by adding Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

370 Neosho Exchange.

Valuation Data.

(1) Reproduction Cost New	$79,705
(2) Reproduction Cost New Less Depreciation	72,516
(3) Prorated Book Cost	53,064
(4) Commission Valuation plus net additions	Not determined

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919	$998
Per cent on (4) Annual Basis	....
Per cent on (3) " "	5.64%
Per cent on (2) " "	4.13%
Robinson's Rate of Reserve for Depreciation	8.170%

Change in Monthly Rates.

Prior to May 1, 1919.

Business:	Com. bat.	Mag.
Individual Line-Wall	$2.50	$1.50
" " -Desk	2.75	1.75
Rural Stations, each	...	1.50
Service " "	...	.25

Residence:		
Individual Line-Wall	1.75	1.50
" " -Desk	2.00	1.75
Two Party-Wall	1.50	...
" " -Desk	1.75	...
Rural Stations, each	...	1.50
Service " "	...	.25

Subsequent to May 1, 1919.

Business:	
Individual Line-Wall or Desk	$3.00
Rural Stations, each	2.00
Service " "	1.00

Residence:	
Individual Line-Wall or Desk	2.00
Two Party-Wall or Desk	1.75
Rural Stations, each	1.50
Service " "	.50

Miscellaneous.

Reproduction Cost New based on Field Inventory and Appraisal made as of July 8, 1918, brought up to date by adding Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

371 Oran Exchange.

Valuation Data.

(1) Reproduction Cost, New	$16,692
(2) Reproduction Cost, New, less Depreciation	13,823
(3) Prorated Book Cost	11,094
(4) Commission Valuation plus net additions	Not determined

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919	†163
Per cent on (4) Annual Basis	
Per cent on (3) " "	†4.40%
Per cent on (2) " "	†3.53%
Robinson's Rate of Reserve for Depreciation	10.824%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall	$2.00	Individual Line—Wall	$2.50
Two-party Line—Desk	2.00	Two-party Line—Desk	2.75
Rural Stations, each	1.50	Rural Stations, each	2.00
Service Stations, each	.50	Service Stations, each	2.00
Residence:		Residence:	
Individual Line—Wall	1.50	Individual Line—Wall	1.50
Two-party—Desk	1.75	Two-party—Desk	1.75
Rural Stations, each	1.50	Rural Stations, each	1.50
Service Stations, each	.50	Service Stations, each	.50

Miscellaneous.

Reproduction Cost, New, based on Field Inventory and Appraisal made as of June 12, 1918, brought up to date by adding Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

372 Pierce City Exchange.

Valuation Data.

(1) Reproduction Cost—New	$34,086
(2) Reproduction Cost—New, less depreciation	30,655
(3) Prorated Book Cost	22,652
(4) Commission Valuation plus net additions	Not determined

†Indicates loss.

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919	386
Per cent on (4) Annual Basis	
Per cent on (3) " "	5.11%
Per cent on (2) " "	3.78%
Robinson's Rate of Reserve for Depreciation	8.7644%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall	$2.00	Individual Line—Wall	$2.50
" " —Desk	2.25	" " —Desk	2.75
Rural stations, each	1.50	Rural Stations, each	2.00
Service Stations, each	.25	Service Stations, each	.80
Residence:		Residence:	
Individual Line—Wall	1.00	Individual Line—Wall	1.50
" " —Desk	1.25	" " —Desk	1.75
Rural stations, each	1.50	Rural Stations, each	1.50
Service Stations, each	.25	Service Stations, each	.10

Miscellaneous.

Reproduction Cost, New, based on Field Inventory and Appraisal made as of May 8, 1918, brought up to date by adding Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

373 Poplar Bluff Exchange.

Valuation Data.

(1) Reproduction Cost—New	$135,216.00
(2) Reproduction Cost—New, less depreciation	133,030.00
(3) Prorated Book Cost	89,859.00
(4) Commission Valuation plus net additions	Not determined

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919	3,392.00
Per cent on (4) Annual Basis	
Per cent on (3) " "	11.32%
Per cent on (2) " "	7.65%
Robinson's Rate of Reserve for Depreciation	7.7273%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual line	$3.00	Individual Line	$4.00
Rural stations, each	2.00	Rural Stations, each	2.25
Service Stations, each	.50	Service Stations, each	1.00
Residence:		Residence:	
Individual Line	1.50	Individual Line	2.00
Two-Party Line	....	Two-Party Line	1.75
Rural Stations, each	1.50	Rural Stations, each	1.50
Service Stations, each	.50	Service Stations, each	.50

Miscellaneous.

Reproduction Cost, New, based on Field Inventory and Appraisal made as of November 15, 1918, with no Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

374 Republic Exchange.

Valuation Data.

(1) Reproduction Cost, New	$10,692.00
(2) Reproduction Cost, New, less Depreciation	9,397.00
(3) Prorated book cost	7,099.00
(4) Commission Valuation plus net addition	Not determined

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919	$10.00
Per cent on (4) Annual Basis	.....
Per cent on (3) " "	.42%
Per cent on (2) " "	.32%

Robinson's Rate of Reserve for Depreciation.. 8.976%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall	$1.50	Individual Line—Wall	$2.00
" " —Desk	1.75	" " —Desk	2.25
Rural Stations, each	1.50	Rural Stations, each	2.00
Service Stations, each.	.16⅔	Service Stations, each	.50

Residence:		Residence:	
Individual Line—Wall	1.00	Individual Line—Wall	1.25
" " —Desk	1.25	" " —Desk	1.50
Rural Stations, each..	1.50	Rural Stations, each..	1.50
Service Stations, each.	.16⅔	Service Stations, each	.25

Miscellaneous.

Reproduction Cost, New, of the Physical Property in this Exchange was determined as follows:

Nine exchanges of similar physical characteristics in which we had recently made field inventories and appraisals were used as a measure of construction cost per station in service, that is, the total reproduction cost, new, for these nine exchanges was divided by the total number of stations in service in the exchanges. The construction cost per station thus obtained was applied to the total number of stations in this exchange.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

375 St. Joseph Exchange.

Valuation Data.

(1) Reproduction Cost, New	$2,920,255.00
(2) Reproduction Cost, New, Less Depreciation	2,635,624.00
(3) Prorated book cost	1,955,385.00
(4) Commission Valuation plus net additions	Not determined

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919	$64,561.00
Per cent on (4) Annual Basis	
Per cent on (3) " "	9.90%
Per cent on (2) " "	7.35%

Robinson's Rate of Reserve for Depreciation 6.601%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line	$5.00	Individual Line	$6.50
Two Party Line	4.00	Two Party Line	5.00
Rural Stations, each	1.50	Rural Stations, each	2.50
Service Stations, each	.50	Service Stations, each	1.50

Residence:		Residence:	
Individual Line.....	2.50	Individual Line.....	3.00
Two Party.....	2.00	Two Party.....	2.50
Four Party.....	.....	Four Party.....	2.00
Rural Stations, each...	1.50	Rural Stations, each..	2.00
Service Stations, each..	.50	Service Stations, each	.75

Miscellaneous.

Reproduction Cost, New, based on Field Inventory and Appraisal made as of May 1, 1919, with no Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

376 St. Louis Exchange.

Valuation Data.

(1) Reproduction Cost, New.....	$17,522,939.00
(2) Reproduction Cost, New, Less Depreciation...	15,532,237.00
(3) Prorated Book Cost.....	11,046,148.00
(4) Commission Valuation plus net additions....	10,123,765.00

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919....	431,966.00
Per cent on (4) Annual Basis.....	12.80%
Per cent on (3) " "	11.73%
Per cent on (2) " "	8.34%
Robinson's Rate of Reserve for Depreciation	6.005%

Change in Monthly Rates.

See Sheet Attached.

Miscellaneous.

Reproduction Cost, New, based on Field Inventory and Appraisal made as of December 31, 1913, plus Net Additions to December 31, 1916, and the total increased 25%. To this total Net Additions were added to June 30, 1919.

Income includes service connection charges for the full period under study and increase tolls from June 14th.

Case begun in 1913, still pending.

History of Case (No. 234-35) up to 1917 found on pages 1-14 in brief of D. A. Brank and R. D. Hardy filed in January, 1918.

Case finally argued and submitted February 21, 1918.

377 St. Louis Exchange.

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Flate Rate.		**Flate Rate.**	
Business:		Business:	
Individual Line.....	$8.00	Individual Line.....	$9.00
Residence:		Residence:	
Individual Line.....	4.00	Individual Line.....	4.00
Two Party.....	3.00	Two Party.....	3.25
Four Party.....	2.00	Four Party.....	2.50
Message Rate.		**Message Rate.**	
Individual Line incl. 70 calls	3.75	Individual Line incl. 67 calls.....	4.00
Individual Line incl. 100 calls	5.00	Next 33 calls 5c each.	
Individual Line incl. 125 calls	5.75	Next 100 " 4c "	
Individual Line incl. 150 calls	6.50	Additional " 3c "	
Additional Calls 3c each.			
Two Party incl. 60 calls	3.25	Two Party incl. 60 calls	3.50
Additional Calls 5c each.		Additional Calls 5c each.	
Coin Box.		**Coin Box.**	
Individual Line—15c per day guaranteed.		Individual Line—15c per day guaranteed.	
Two Party—10c per day guaranteed.		Two Party—(discontinued).	

378 Sedalia Exchange.

Valuation Data.

(1) Reproduction Cost, New.....	$566,333
(2) Reproduction Cost, New, Less Depreciation.....	510,819
(3) Prorated book cost.....	379,958
(4) Commission Valuation, plus net additions.....	Not determined

Income and Expense.

Net Income before deducting Depreciation, 4 months, May, June, July, and August 1919	$8,902
Per cent on (4) Annual Basis	
Per cent on (3) " "	7.03%
Per cent on (2) " "	5.23%
Robinson's Rate of Reserve for Depreciation	7.950%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall.	$3.00	Individual Line—Wall or Desk	$4.00
" " —Desk.	3.25		
Two Party Line—Wall.	2.50	Two Party Line—Wall or Desk	3.50
" " " —Desk.	2.75		
Rural Stations, each	1.50	Rural Stations, each	2.50
Service Stations, each	.35	Service Stations, each	1.00
Residence:		Residence:	
Individual Line—Wall.	$1.75	Individual Line—Wall or Desk	$2.00
" " —Desk.	2.00		
Two Party Line—Wall.	1.50	Two Party Line—Wall or Desk	1.75
" " " —Desk.	1.75		
Four Party Line—Wall	1.25	Four Party Line—Wall or Desk	1.50
" " " —Desk	1.50		
Rural Stations, each	1.50	Rural Stations, each	2.00
Service Stations, each	.35	Service Stations, each	.50

Miscellaneous.

Reproduction Cost, New, based on Field Inventory and Appraisal made as of June 30, 1919, with no Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

379 Senath Exchange.

Valuation Data.

(1) Reproduction Cost, New	$14,29
(2) Reproduction Cost, New, less Depreciation	12,54
(3) Prorated book cost	9,51
(4) Commission Valuation, plus Net Additions	Not determined

Income and Expense.

Net Income, before deducting Depreciation, 4 months, May, June, July and August, 1919	*$194
Per cent on (4) Annual Basis	
Per cent on (3) " "	*6.12%
Per cent on (2) " "	*4.63%
Robinson's Rate of Reserve for Depreciation	9.821%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall.	$2.00	Individual Line—Wall	$2.50
" " —Desk.	2.00	" " —Desk	2.75
Rural Stations, each...	1.50	Rural Stations, each..	2.00
Service Stations, each..	.50	Service Stations, each.	1.00
Residence:		Residence:	
Individual Line—Wall.	$1.00	Individual Line—Wall	$1.50
" " —Desk.	1.25	" " —Desk	1.75
Rural Stations, each...	1.50	Rural Stations, each..	1.50
Service Stations, each..	.50	Service Stations, each	.50

Miscellaneous.

Reproduction Cost, New, based on Field Inventory and Appraisal made as of January 15, 1919, brought up to date by adding Net Additions.

Income includes service connection charges for the full period under study and incre-sed tolls from June 14th.

380

Sikeston Exchange.

Valuation Data.

(1) Reproduction Cost, New	$75,712
(2) Reproduction Cost, New, Less Depreciation	66,310
(3) Prorated Book Cost	50,344
(4) Commission Valuation, plus Net Additions	Not determined

*Indicates loss.

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919..... $771

Per cent on (4) Annual Basis.....
Per cent on (3) " " 5.59%
Per cent on (2) " " 3.49%

Robinson's Rate of Reserve for Depreciation.... 9.878%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line.....	$2.50	Individual Line.....	$3.50
Rural Stations, each....	1.50	Rural Stations, each..	2.00
Service Stations, each..	.50	Service Stations, each	1.00
Residence:		Residence:	
Individual Line—Wall.	$1.50	Individual Line—	
" " —Desk.	1.75	Wall or Desk.....	$2.00
Two Party.....	....	Two Party.....	1.75
Rural Stations, each...	1.50	Rural Stations, each..	1.50
Service Stations, each..	.50	Service Stations, each	.50

Miscellaneous.

Reproduction Cost, New, based on Field Inventory and Appraisal made as of June 1, 1918, brought up to date by adding Net Additions.
Income includes service connection charges for the full period under study and increased tolls from June 14th.

381 Slater Exchange.

Valuation Data.

(1) Reproduction Cost New $54,904
(2) Reproduction Cost New, Less Depreciation 49,607
(3) Prorated Book Cost 36,497
(4) Commission Valuation, plus Net Additions....Not determined

Income and Expense.

Net Income before deducting depreciation, 4 months, May, June, July and August, 1919 ..... $694

Per cent on (4) Annual Basis .....
Per cent on (3) " " 5.70%
Per cent on (2) " " 4.20%

Robinson's Rate of Reserve for Depreciation 8.468%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall	$2.25	Individual Line—Wall	$2.75
" " —Desk	2.50	Individual Line—Desk	3.00
Rural Stations, each	1.50	Rural Stations, each	2.00
Service Stations, each	.50	Service Stations, each.	1.00
Residence:		Residence:	
Individual Line—Wall	$1.25	Individual Line—Wall	$1.75
" " —Desk	1.50	Individual Line—Desk	2.00
Rural Stations, each	1.50	Rural Stations, each	1.50
Service Stations, each	.50	Service Stations, each.	.50

Miscellaneous.

Reproduction Cost New, based on Field Inventory and Appraisal made as of July 21, 1918, brought up to date by adding Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

382

Smithville Exchange.

Valuation Data.

(1) Reproduction Cost, New	$25,657
(2) Reproduction Cost, New, Less Depreciation	22,549
(3) Prorated Book Cost	17,036
(4) Commission Valuation plus Net Additions	Not determined

Income and Expense.

Net Income before deducting Depreciation, 4 months, May, June, July and August, 1919	$592
Per cent on (4) Annual Basis	
" " " (3) " "	10.42%
" " " (2) " "	7.88%
Robinson's Rate of Reserve for Depreciation	8.976%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall	$2.00	Individual Line—Wall	$2.50
" " —Desk	2.25	Individual Line—Desk	2.75
Rural Stations, each	1.50	Rural Stations, each	2.00
Linkville & Gashland Swbd.	.83⅓	Linkville & Gashland Swbd.	.83⅓
Smithville & Paradise Swbd.	.62½	Smithville & Paradise Swbd.	.62½
Residence:		Residence:	
Individual Line—Wall	$1.50	Individual Line—Wall	$1.75
" " —Desk	1.75	Individual Line—Desk	2.00
Four-party " —Wall	1.00		
" " —Desk	1.25		
Rural Stations, each	1.50	Rural Stations, each	1.50
Linkville & Gashland Swbd.	.83⅓	Linkville & Gashland Swbd.	.83⅓
Smithville & Paradise Swbd.	.62½	Smithville & Paradise Swbd.	.62½

Miscellaneous.

Reproduction Cost, New, of the Physical Property in this Exchange was determined as follows:

Nine exchanges of similar physical characteristics in which we had recently made field inventories and appraisals, were used as a measure of construction cost per station in service, that is, the total reproduction cost, new, for these nine exchanges was divided by the total number of stations in service in the exchanges. The construction cost per station thus obtained was applied to the total number of stations on this exchange.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

383 Springfield Exchange.

Valuation Data.

(1) Reproduction Cost, New	$1,390,88
(2) Reproduction Cost, New, less Depreciation	1,328,86
(3) Prorated Book Cost	863,39
(4) Commission Valuation plus Net Additions	849,14

Income and Expense.

Net Income before deducting Depreciation, 4 months, May, June, July and August, 1919		$29,659
Per cent on (4) Annual Basis	10.48%	
Per cent on (3) Annual Basis	10.31%	
Per cent on (2) Annual Basis	6.70%	
Robinson's Rate of Reserve for Depreciation	6.0553%	

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line	$4.00	Individual Line	$5.50
Two-party		Two-party	4.00
Rural Stations, each	1.50	Rural Stations, each	2.50
Service Stations, each	.50	Service Stations, each.	1.50
Residence:		Residence:	
Individual Line	2.25	Individual Line	2.50
Two-party	1.75	Two-party	2.25
Four-party		Four-party	2.00
Rural Stations, each	1.50	Rural Stations, each	2.00
Service Stations, each	.50	Service Stations, each.	.75

Miscellaneous.

Reproduction Cost, New, based on Field Inventory and Appraisal made as of September 30, 1916, plus Net Additions to December 31, 1916, and the total increased 25%. To this total Net Additions were added to June 30, 1919.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

384 Stanberry Exchange.

Valuation Data.

(1) Reproduction Cost New	$39,749
(2) Reproduction Cost New Less Depreciation	35,706
(3) Prorated Book Cost	26,452
(4) Commission Valuation plus net additions	Not determined

Income and Expense.

Net Income before Deducting Depreciation, 4 months, May, June, July and August, 1919	†437
Per cent on (4) Annual Basis	
Per cent on (3) " "	†4.96%
Per cent on (2) " "	†3.67%
Robinson's Rate of Reserve for Depreciation	8.830%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall	$2.00	Individual Line—Wall	$2.75
" " —Desk	2.25	Individual Line—Desk	3.00
Rural Stations, each	1.50	Rural Stations, each	2.00
Service " "	.25	Service " "	1.00
Residence:		Residence:	
Individual Line—Wall	1.50	Individual Line—Wall	1.75
" " —Desk	1.75	Individual Line—Desk	2.00
Rural Stations, each	1.50	Rural Stations, each	1.50
Service " "	.25	Service " "	.50

Miscellaneous.

Reproduction Cost New based on Field Inventory and Appraisal made as of July 25, 1918, brought up to date by adding Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

385 Trenton Exchange.

Valuation Data.

(1) Reproduction Cost, New	$132,077
(2) Reproduction Cost, New, Less Depreciation	120,484
(3) Prorated Book Cost	87,884
(4) Commission Valuation, plus net additions	Not determined

†Indicates loss.

Income and Expense.

Net Income before Deducting Depreciation, 4 months, May, June, July and August, 1919 ..... $2,763

Per cent on (4) Annual Basis ....
Per cent on (3) " " 9.43%
Per cent on (2) " " 6.88%

Robinson's Rate of Reserve for Depreciation 8.295%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line—Wall .	$2.50	Individual Line—	
" " —Desk .	2.75	Wall or Desk	3.50
Rural Stations, each ..	1.50	Rural Stations, each .	2.00
Service Stations, each .	.50	Service Stations, each.	1.00
Residence:		Residence:	
Individual Line—Wall .	1.50	Individual Line—	
" " —Desk .	1.75	Wall or Desk	2.00
Rural Stations, each ..	1.50	Rural Stations, each .	1.50
Service Stations, each .	.50	Service Stations, each.	.50

Miscellaneous.

Reproduction Cost, New, based on Field Inventory and Appraisal made as of June 22, 1918, brought up to date by adding Net Additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

386 Webster Groves-Kirkwood Exchange.

Valuation Data.

(1) Reproduction Cost, New $718,314.00
(2) Reproduction Cost, New, less depreciation 687,294.00
(3) Prorated book cost 476,974.00
(4) Commission Valuation, plus net additions ....Not determined

Income and Expense.

Net Income before deducting depreciation, four months, May, June, July and August, 1919 ..... $12,797.00

Per cent on (4) Annual Basis ....
Per cent on (3) " " 8.05%
Per cent on (2) " " 5.59%

Robinson's Rate of Reserve for depreciation .. 6.747%

Change in Monthly Rates.

Prior to May 1, 1919.		Subsequent to May 1, 1919.	
Business:		Business:	
Individual Line	$4.00	Individual Line	$4.50
Two Party Line	3.50	Two Party Line	4.00
Rural Stations, each ..	2.50	Rural Stations, each .	2.50
Service Stations, each .	.50	Service Stations, each.	1.00
Residence:		Residence:	
Individual Line	$2.50	Individual Line	$2.50
Two Party	2.00	Two Party	2.25
Rural Stations, each ..	2.00	Rural Stations, each .	2.00
Service Stations, each .	.50	Service Stations, each.	.50

Miscellaneous.

Reproduction Cost, New, based on field inventory and appraisal made as of December 31, 1917, brought up to date by adding net additions.

Income includes service connection charges for the full period under study and increased tolls from June 14th.

387 All of these exhibits, 212 to 255, inclusive, are taken from the books of the company and correctly show what they purport to show.

The first page of Exhibit 212 relates to the system of the Southwestern Bell Telephone Company in the State of Missouri, exclusive of Kansas City and Independence. It shows the reproduction cost new, the reproduction cost new less depreciation, and the cost as shown by the books. The data in regard to reproduction cost new and reproduction cost new less depreciation was obtained from Mr. Robinson's exhibits in this case. The data regarding the cost as shown by the books is taken from the books of the company, and is in as an exhibit. This exhibit 212 covers 46 exchanges, which amount to 95 per cent of the total exchange property in the State of Missouri, as well as the entire system in the State of Missouri. Exchanges which have been omitted from exhibit 212 are valued at less than eight or nine thousand dollars.

A summary of exhibit 212, showing in condensed form the same information that is shown on exhibit 212 as regards valuation, net income and the per cent of return, was introduced in evidence as exhibit 256, and is as follows:

EXHIBIT 256.

Southwestern Bell Telephone Company.

Summary of Investment and Income for 46 Exchanges.

	Investment.			Balance net income before deducting depreciation, four months ended Aug. 31, 1919.	Per cent balance net income for depreciation and return (annual basis).			Robinson's rate of reserve for depreciation.
	Reproduction cost new.	Reproduction cost new less depreciation.	Prorated book cost.		Reproduction cost new basis.	Reproduction cost new less depreciation basis.	Prorated book cost basis.	
Armstrong	$19,370	$17,497	$12,883	†$114	†1.77%	†1.96%	†2.65%	10.277%
Aurora	60,253	55,388	40,125	469	2.33%	2.54%	3.51%	8.724%
Bismarck	11,571	10,170	7,683	†481	†12.47%	†14.19%	†16.78%	8.976%
Bloomfield	23,394	19,616	15,533	398	5.10%	6.09%	7.69%	8.976%
Blue Springs	16,727	14,026	11,107	†8	†.45%	†.18%	†.22%	8.976%
Brookfield	129,510	117,701	86,177	2,385	5.53%	6.08%	8.30%	8.976%
Campbell	23,646	18,873	15,610	610	7.74%	9.69%	11.72%	8.408%
Carrollton	168,042	149,991	104,956	2,292	4.09%	4.58%	6.55%	8.976%
Caruthersville	57,192	52,574	37,974	.....	.....	.....	.....	7.993%
Chaffee	19,352	17,732	12,864	279	4.32%	4.72%	6.51%	8.829%
Charleston	60,919	53,642	39,742	389	1.92%	2.18%	2.94%	8.750%
Chillicothe	214,973	194,584	140,469	3,808	5.31%	5.87%	8.13%	8.036%
Clayton	157,652	137,335	104,677	3,040	5.70%	6.64%	8.71%	7.767%
Dexter	38,486	32,271	25,554	†612	†4.77%	†5.69%	†7.18%	8.114%
East Prairie	12,200	9,737	8,101	†25	†.62%	†.77%	†.93%	8.976%
Fayette	90,131	80,682	56,377	†513	†1.71%	†1.91%	†2.73%	8.976%
Ferguson	70,828	63,957	47,070	319	1.35%	1.50%	2.03%	8.317%
Glasgow	53,120	43,243	30,175	†145	†.22%	†1.00%	†1.44%	8.280%
Hannibal	489,037	458,125	315,915	11,716	7.19%	7.67%	11.13%	7.845%
Higbee	13,961	12,834	9,270	10	.22%	.24%	.32%	6.902%
Kirksville	139,290	122,978	92,694	3,640	7.84%	8.88%	11.78%	8.976%
								8.727%

EXHIBIT 256—*Continued.*

	Investment.			Balance net income before deducting depreciation, four months ended Aug. 31, 1919.	Per cent balance net income for depreciation and return (annual basis).			Robinson's rate of reserve for depreciation.
	Reproduction cost new.	Reproduction cost new less depreciation.	Prorated book cost.		Reproduction cost new basis.	Reproduction cost new less depreciation basis.	Prorated book cost basis.	
Lamar	58,100	53,415	38,655	206	1.06%	1.15%	1.60%	8.608%
Lancaster	20,321	18,351	13,512	†405	†5.06%	†6.63%	†8.99%	9.148%
Lees Summit	70,389	63,055	46,857	†217	†.92%	†1.04%	†1.45%	9.231%
Malden	27,848	26,722	18,507	443	4.78%	4.98%	7.20%	8.337%
Marionville	17,008	14,108	11,305	†665	†11.72%	†14.13%	†17.65%	9.248%
Marshall	191,708	180,713	125,110	3,732	5.84%	6.20%	8.95%	7.511%
Mexico	176,854	166,835	116,095	3,434	5.82%	6.17%	8.87%	6.940%
Moberly	276,519	259,518	173,973	5,652	6.13%	6.53%	9.75%	6.935%
Monett	82,215	72,853	54,816	566	2.06%	2.33%	3.10%	8.666%
Neosho	79,705	72,516	53,064	998	3.76%	4.13%	5.64%	8.170%
Oran	16,692	13,823	11,094	†163	†2.93%	†3.53%	†4.60%	10.824%
Pierce City	34,086	30,655	22,652	386	3.40%	3.78%	5.11%	8.764%
Poplar Bluff	135,216	133,030	89,859	3,391	7.53%	7.65%	11.32%	7.727%
Republic	10,692	9,397	7,099	10	.28%	.32%	.42%	8.976%
St. Louis	17,522,939	15,532,237	11,046,148	431,966	7.39%	8.34%	11.73%	6.005%
St. Joseph	2,920,255	2,635,624	1,955,385	64,561	6.63%	7.35%	9.90%	6.601%
Sedalia	566,333	510,819	379,958	8,902	4.72%	5.23%	7.03%	7.950%
Senath	14,296	12,549	9,510	†193	†4.06%	†4.63%	†6.12%	9.821%
Sikeston	75,712	66,310	50,344	771	3.06%	3.49%	4.59%	9.878%
Slater	54,904	49,607	36,497	694	3.79%	4.20%	5.70%	8.468%
Smithville	25,657	22,549	17,036	592	6.92%	7.88%	10.42%	8.976%
Springfield	1,390,880	1,328,862	863,392	29,659	6.40%	6.70%	10.31%	6.055%
Stanberry	39,749	35,706	26,452	†437	†3.30%	†3.67%	†4.96%	8.830%
Trenton	132,077	120,484	87,884	2,763	6.28%	6.88%	9.43%	8.295%
Webster Groves—Kirkwood	718,314	687,294	476,974	12,797	5.34%	5.59%	8.05%	6.747%

388 The figures in column 5 marked with a † indicate losses, there being nothing for either return or depreciation, the income being less than the operating expenses under the new rates. The towns showing losses in column 5 are all small towns, the aggregate income amounting to very little.

The figures in columns 6, 7 and 8 marked with a † denote the per cent on the reproduction cost, new basis, and reproduction cost, new, less depreciation basis and prorated book cost basis, respectively, that the loss shown in column 5 figures on these respective bases.

The St. Louis exchange is 65 per cent of the total exchange property in the State of Missouri and is about one-half of the total property in the State of Missouri, including toll property.

The St. Louis, St. Joseph and Springfield exchanges include about 80 per cent of the total property in the State of Missouri.

The figures in the fifth column of Exhibit 256 are not based upon and have nothing to do with the valuations of the different exchanges. They are based upon revenue and expense statements introduced by Mr. Scott and show the actual net revenue for depreciation and return, or the actual loss, which in each case is the difference between the gross operating revenue and the operating expenses of the particular exchange. The percentages for net income or loss for depreciation and return in column 6 are based upon the values as shown in column 2 and the net income or loss for depreciation and return shown in column 5, and those in column 7 are based upon the values in column 3 and the figures in column 5, and the percentages in column 8 are based upon the values in column 4 and the figures in column 5; the percentages in column 9 are the rates of depreciation which Mr. Robinson testified should be set aside annually for the exchanges listed in column 1.

Witness has made an appraisal showing the reproduction cost new and the reproduction cost new, less depreciation, of all the exchanges in Missouri operated by the Southwestern Bell Telephone Company and the toll property and the total of all of the property of the Southwestern Bell Telephone Company in Missouri. This includes all of the exchanges in the State of Missouri, including those in regard to which testimony has been offered. The arrangement of the exchanges is alphabetical. This appraisal was introduced in evidence as Exhibit 43, and is as follows:

(Here follows Exhibit 43, marked page 389.)

390 Nothing is included in these figures for "going concern value," nor for any item properly chargeable to the intangible account nor is anything included in these figures for the receivers, transmitters and induction coils which are furnished by the American Telephone and Telegraph Company to the Southwestern Company under the 4½% license contract hereinafter referred to. These receivers, transmitters and induction coils are the property of the American Telephone and Telegraph Company and are never included as a part of the property of the Southwestern Company. The "working capital" included in the figures, $22,888,943.00, amounted to $1,051,167.00 and was the working capital required and actually used.

391 The Auditor for the Commission in the St. Louis case testified:

392 The testimony of Mr. McShane shows that as to revenue and expense statements he and the company's auditors do not disagree. There was some disagreement between them as to what accounts certain items should be charged to. Both agree that the books of the company are correct.

Q. As a matter of fact, are you informed as to whether that represents the original cost of all of the items that have ever gone into the plant account, or whether it represents the original cost of all the items which are now contained in the physical property of this company?

A. From the examination of the books, I would think that those figures represent the original cost of the items now in operation, for the reason that the company has reduced their plant account by removals; that is generally done monthly, and in the early years they wrote off yearly items on account of the removals, and the books would really indicate that the plant account is reasonably correct on that account.

393 The Engineer for the Southwestern Company testified in this case as follows:

EXHIBIT 88.

Southwestern Bell Telephone Company.

Prorated Book Cost.

Individual Exchange Valuations and Toll Valuation Determined from the Relation of the Total Book Cost to the Reproduction Cost, New, of the Physical Property, Exclusive of Land and Buildings Which are Valued at Their Actual Cost.

June 30, 1919.

Towns.	Total reproduction cost new of physical telephone property exclusive of land and buildings.	Percentage relation of book cost to reproduction cost new.	Valuation based on relation of total book cost to total reproduction cost of physical property exclusive of land and buildings.	Book cost of land and buildings.	Working capital.	Valuation based on book cost of land and buildings and relation of total book cost to total reproduction cost of physical property, exclusive of land and buildings, plus working capital.
Armstrong	15,690.00	78.385358	12,299.00	.....	584.00	12,883.00
Aurora	48,842.00	"	38,285.00	.....	1,840.00	40,125.00
Benton	2,844.00	"	2,228.00	.....	109.00	2,337.00
Bismarck	9,343.00	"	7,324.00	.....	359.00	7,683.00
Bloomfield	18,890.00	"	14,807.00	.....	726.00	15,533.00
Blue Springs	13,507.00	"	10,588.00	.....	519.00	11,107.00
Brookfield	104,876.00	"	82,207.00	.....	3,970.00	86,177.00
Campbell	17,344.00	"	13,595.00	1,281.31	734.00	15,610.31
Cardwell	4,976.00	"	3,900.00	.....	191.00	4,091.00
Carrollton	120,338.00	"	94,327.00	5,469.57	5,160.00	104,956.57
Carthage	115,175.00	"	90,280.00	.....	4,365.00	94,645.00
Caruthersville	46,181.00	"	36,199.00	.....	1,775.00	37,974.00
Chaffee	15,649.00	"	12,267.00	.....	597.00	12,864.00

EXHIBIT 88—*Continued.*

Towns.	Total reproduction cost new of physical telephone property exclusive of land and buildings.	Percentage relation of book cost to reproduction cost new.	Valuation based on relation of total book cost to total reproduction cost of physical property exclusive of land and buildings.	Book cost of land and buildings.	Working capital.	Valuation based on book cost of land and buildings and relation of total book cost to total reproduction cost of physical property, exclusive of land and buildings, plus working capital.
Charleston	44,044.00	"	34,524.60	3,345.71	1,872.00	39,741.71
Chillicothe	154,661.00	"	121,232.00	12,626.62	6,610.00	140,468.62
Clarkton	4,367.00	"	3,423.00	.....	169.00	3,592.00
Clayton	127,300.00	"	99,785.00	.....	4,892.00	104,677.00
Dexter	31,077.00	"	24,360.00	.....	1,194.00	25,554.00
East Prairie	9,851.00	"	7,722.00	.....	379.00	8,101.00
Essex	4,976.00	"	3,900.00	.....	191.00	4,091.00
Eureka	8,633.00	"	6,767.00	.....	332.00	7,099.00
Fayette	62,537.00	"	49,020.00	4,598.84	2,758.00	56,376.84
Ferguson	57,258.00	"	44,882.00	.....	2,188.00	47,070.00
Glasgow	32,531.00	"	25,500.00	3,040.44	1,635.00	30,175.44
Glenwood	5,078.00	"	3,980.00	.....	195.00	4,175.00
Grain Valley	3,351.00	"	2,627.00	.....	129.00	2,756.00
Greenwood	12,086.00	"	9,474.00	.....	465.00	9,939.00
Hannibal	336,360.00	"	263,657.00	37,220.48	15,028.00	315,905.48
Hayti	11,476.00	"	8,996.00	.....	441.00	9,437.00
Higbee	11,273.00	"	8,837.00	.....	433.00	9,270.00
Hornersville	5,180.00	"	4,060.00	.....	199.00	4,259.00
Kansas City	.....		.....	377,994.30	.....	377,994.30
Kennett	48,139.00	"	37,734.00	.....	1,850.00	39,584.00
Kirksville	112,811.00	"	88,427.00	.....	4,267.00	92,694.00
Lamar	47,040.00	"	36,872.00	.....	1,783.00	38,655.00
Lancaster	16,442.00	"	12,888.00	.....	625.00	13,513.00

Lee's Summit	57,031.00	"	44,704.00	.....	2,153.00	46,857.00
Lilbourne	3,859.00	"	3,025.00	.....	148.00	3,173.00
Malden	22,513.00	"	17,647.00	.....	860.00	18,507.00
Marceline	46,037.00	"	36,086.00	726.26	1,743.00	38,555.26
Marionville	13,750.00	"	10,780.00	.....	525.00	11,305.00
Marshall	133,141.00	"	104,363.00	14,876.79	5,870.00	125,109.79
Mexico	114,236.00	"	89,544.00	21,114.36	5,437.00	116,095.36
Moberly	183,938.00	"	144,180.00	21,326.91	8,466.00	173,972.91
Monett	66,727.00	"	52,304.00	.....	2,512.00	54,816.00
Monroe City	36,968.00	"	28,977.00	.....	1,421.00	30,398.00
Morehouse	9,750.00	"	7,643.00	.....	375.00	8,018.00
Neosho	64,587.00	"	50,627.00	.....	2,437.00	53,064.00
New Madrid	21,891.00	"	17,159.00	.....	837.00	17,996.00
Noel	1,422.00	"	1,115.00	.....	55.00	1,170.00
Oran	13,496.00	"	10,579.00	.....	515.00	11,094.00
Paris	31,991.00	"	25,076.00	.....	1,229.00	26,305.00
Peirce City	27,556.00	"	21,600.00	.....	1,052.00	22,652.00
Poplar Bluff	109,311.00	"	85,684.00	.....	4,175.00	89,859.00
Portageville	9,851.00	"	7,722.00	.....	379.00	8,101.00
Republic	8,633.00	"	6,767.00	.....	332.00	7,099.00
Sedalia	458,790.00	"	359,624.00	.....	17,334.00	376,958.00
Seligman	1,219.00	"	956.00	.....	47.00	1,003.00
Senath	11,572.00	"	9,071.00	.....	439.00	9,510.00
Sikeston	61,254.00	"	48,014.00	.....	2,330.00	50,344.00
Slater	44,403.00	"	34,805.00	.....	1,692.00	36,497.00
Smithville	20,718.00	"	16,240.00	.....	796.00	17,036.00
Southwest City	6,500.00	"	5,095.00	.....	250.00	5,345.00
Springfield	949,753.00	"	744,467.00	76,157.21	42,768.00	863,392.21
Stanberry	32,193.00	"	25,234.00	.....	1,218.00	26,452.00
St. Charles	95,535.00	"	74,885.00	1,206.79	3,695.00	79,876.79
St. Clair	6,601.00	"	5,174.00	.....	254.00	5,428.00
St. Joseph	2,160,716.00	"	1,693,685.00	171,729.78	89,970.00	1,955,384.78
395						
St. Louis	12,276,975.00	"	9,623,351.00	906,780.64	516,016.00	11,046,147.64
Tarkio	61,834.00	"	48,469.00	200.00	2,367.00	51,036.00

EXHIBIT 88—*Continued.*

Towns.	Total reproduction cost new of physical telephone property exclusive of land and buildings.	Percentage relation of book cost to reproduction cost new.	Valuation based on relation of total book cost to total reproduction cost of physical property exclusive of land and buildings.	Book cost of land and buildings.	Working capital.	Valuation based on book cost of land and buildings and relation of total book cost to total reproduction cost of physical property, exclusive of land and buildings, plus working capital.
Trenton	106,951.00	78.285358	83,834.00	.....	4,050.00	87,884.00
Valley Park	6,094.00	"	4,777.00	.....	234.00	5,011.00
Warrensburg	53,615.00	"	42,026.00	.....	2,061.00	44,087.00
Washburn	508.00	"	398.00	.....	20.00	418.00
Webster Groves—Kirkwood.	531,782.00	"	416,839.00	37,987.25	22,148.00	476,974.25
Wentworth	2,539.00	"	1,990.00	.....	98.00	2,088.00
Toll	6,147,179.00		4,818,488.00	.....	234,692.00	5,053,180.00
				1,697,773.26	1,051,564.00	22,889,314.26
Grand Total	25,874,089.00		20,139,977.00			

Q. You may explain Exhibit 88. I would like that explained with some little care, Mr. Robinson.

A. The Commission has in a great many of these cases asked for original cost of the various exchange properties in which the company was applying for rate increases. There is no way I know of in which we can obtain the original cost for these properties—that is, generally speaking—which would be at all reliable. That is, I don't know of any way in which I can obtain the original cost for a representative exchange of this company which I would be willing to present to the Commission.

Q. Now, stop right there. In the Springfield case an estimated original cost was given by Mr. Kozitsky. Now, he is gone, a long way off. I wish you would with perfect frankness give us your criticism on his estimated original cost of that town. That brings the thing down to a concrete—you may not be sufficiently familiar with that particular instance to criticise it, but do so if you are sufficiently familiar, and if not tell the Commission frankly why you can't designate the original cost.

A. The Springfield property at the time of the Springfield hearing was a little unusual as compared with other properties which have been before this Commission. It had been recently rebuilt. A very large proportion of the whole was entirely new, and it was possible on that account to find the actual cost of the new portion of the property. I think that was what decided Mr. Kositzky in his determination to submit at the request of the Commission an original cost valuation of that property. He discussed it with me at the time,
and notwithstanding the fact that a lot of the property was
396 entirely new I advised against submitting a valuation because I didn't think that the figures which he would be able to evolve or obtain for the remaining portion of the property would be at all accurate. However, he submitted the original cost—I think it was an estimated original cost—I think that is the way it was described.

Mr. Gleed:

Q. Yes.

A. And I am reasonably sure that the estimate on the portion other than the newly-built plant was nothing more than an estimate.

Commissioner Flad:

Q. If you have a complete inventory of a plant and you know approximately when the various parts were built isn't an estimate of the original cost just as accurate as an estimate of reproduction cost at the present time?

A. Yes, if that condition existed.

Q. Don't you almost always know approximately when certain portions of the plant were built. You know the poles are a certain number of years old, and when the building was built, and when the greater portion of the construction was put up? Don't you know that, as a rule?

A. No, Mr. Commissioner.

Q. Within a few years?

A. No, I would not have sufficient knowledge to enable us to fix prices which would be at all reliable. I think anything we would obtain from that method would be less exact than our book costs.

Q. It looks to me as though it was almost equally exact, or very enlightening.

A. Well, we always have our book cost.

Mr. Gleed:

Q. We have not got that by exchanges, however?

A. I think the book cost is a very reliable figure. Certainly, I am recording the cost of construction every day with sixty
397 accountants, who are experts in their line, and have been trained for a considerable number of years. We follow the system of accounting, the classification prescribed by this Commission and the Interstate Commerce Commission as accurately as we can, and the result of the work of this accounting force is indicated by our books. I don't see how we could cast back and endeavor to determine how old a certain pole was or how old a certain piece of substation apparatus was, or drop-wire, or line-wire, and obtain a figure that would be as reliable as our book cost in which we use every possible precaution to record accurately transactions of the construction force. I don't see how we could do it.

Commissioner Flad:

Q. I can see your book cost would be accurate as far as recent expenditures go, but when it comes to covering purchases of property already constructed your book cost won't reflect it.

A. No, if our purchased properties were any considerable portion of our entire properties, I think it would cast some doubt on our book values, but inasmuch as it is not, I think our book values must be regarded as being as reliable as books can be. I think they are far more reliable than to be guessing that this was so old and the cost so much, put up in 1898, and something else in 1905—I think the books would be better than anything we could get in that way.

Mr. Gleed:

Q. While the purchased property is only a small per cent, let's think about that. Is what you paid for it the original cost, or is what it cost the man to produce it who did produce it? That is the original cost, isn't it?

A. Yes, sir. I had an experience with historical cost or
398 estimated original cost, whatever you might call it, in the original St. Louis case which the St. Louis City Commission heard. I worked for a year on that. We had to get at a figure because that was the only figure the Commission would entertain. We did submit a valuation, which was the best valuation I could devise under that method, but I never was satisfied with it, and I

would never willingly submit a valuation of that kind, because of the inaccuracies I know must exist in that valuation.

Q. Is it a very laborious process?

A. Yes; tremendously laborious. We had to look up all the records showing purchases of materials, daily work records, dating back to the beginning of the company. This record was rather incomplete, and after we had it it was not much good to us because we were never able to determine whether or not the property which we were trying to evaluate was put in in 1895 or 1905. We just had a record of costs made at some time or other which we could not associate with the existing plant. Some of our plant elements we could get accurate costs on. For instance, our land and buildings.

Q. You have explained your difficulty. Now explain what you have done and whether you think it may be of some value?

A. Now, being of the conviction that our book cost is a very reliable statement of what our property cost us, I have attempted in this exhibit to develop the valuation of exchanges of our entire exchange properties and of our toll property from the relationship existing between these properties as shown in my estimate of the reproduction cost new of these properties. In other words,
399 I have taken the total book value or book cost of the properties and I have divided that among the different exchanges comprising the property and the toll property in accordance with the ratio which each exchange on reproduction new cost basis bears to the whole, on the reproduction cost new basis. Now in order to make this more accurate, I have not treated land and buildings in that way, because we knew definitely what land and buildings cost us.

Commissioner Blair:

Q. You have taken them out?

A. Yes sir.

Q. And added them back in later?

A. Yes, sir.

Q. Is this 73.38, etc., the percentage valuation between your reproduction cost new and book cost?

A. Excluding land and buildings; yes, sir.

Q. Then you have applied that to the constant all the way through?

A. Yes. That is the best I could do in the way of arriving at original cost.

Mr. Gleed:

Q. You took your total book account and distributed it among the different exchanges on the ratio that the book cost of each exchange bears to the total reproduction cost? That is substantially it?

A. Yes, sir.

Q. If you have an exchange that was built last year at 1918 prices, will your result here be too high or too low? Take, for instance, Poplar Bluff. Wasn't that built last year?

A. It would be too low.

Q. This estimate would be lower than actual cost?

A. Yes, sir.

Q. Now, you know what Mr. Kositzky's estimate in the origi case at Springfield was. How does that compare with this prora original cost you have got?

A. I think it is very—they are very close together.

Q. Then this is submitted as an approximately correct origi cost per exchange, it it?

A. Yes. It is the best I could do in the way of obtaining origi cost. I think the headings over each column describe exactly wh this purports to be.

Commissioner Blair:

Q. That might be high or might be low for any particular e change?

A. Yes, sir.

Commissioner Bean:

Q. Do you mean original cost of property now in use?

A. Yes.

Mr. Gleed:

Q. For exchanges of approximately the same age it would be a right, but for a very new exchange or a very old exchange it mig not be very accurate?

A. Yes, that is true.

400 The Engineer for the Southwestern Company testified i the St. Louis case as follows:

401 ROBINSON'S EXHIBIT H.

St. Louis Inventory and Appraisal.

Comparison of Appraisals—Bell Co.'s and Mr. Player's.

Statement No. 1 attached gives a comparison by plant accoun for direct cost, secondary cost and total reproduction cost, with th following result:

Southwestern T. & T. Reproduction Cost	$10,150,3
Mr. Player's Reproduction Cost	8,616,3
Difference	$1,534,0

Statement No. 2 attached gives a further comparison by plant a counts which have been rearranged into three classes: (A) seconda cost, (B) detail of large direct cost differences in appraisal, a (C) detail of small direct cost differences in appraisal, with the f lowing result:

Comparison of Cost.

Property accts.	Mr. Player's appraisal.	Bell Co.'s appraisal.	Difference.	Per cent of difference based on Bell appraisal.
(B C) Direct Costs....	$7,531,517	$8,764,120	$1,232,603	14.06
(A) Secondary Costs...	1,084,829	1,386,276	301,447	21.74
Total	$8,616,346	$10,150,396	$1,534,050	15.11
(B) Real Estate.....	555,998	1,233,101	677,103	54.91
C. O. Equipment..	1,420,738	1,472,889	52,151	3.54
Poles	507,729	603,777	96,048	15.90
U. G. Conduit....	1,200,799	1,432,552	231,753	16.18
Total	$3,685,264	$4,742,319	$1,057,055	22.29
(C) All Equipment except C. O.....	$844,622	$877,742	$33,720	3.84
All Aerial Plant except Poles....	1,396,686	1,496,133	99,447	6.64
All U. G. Plant except Conduit....	1,304,301	1,368,302	64,001	4.68
Right of Way....	27,565	29,722	2,157	7.26
Miscellaneous Property	273,679	249,902	†23,777	†7.31
Total	$3,846,523	$4,021,801	$175,548	4.36

402 Item (A), Secondaries.

Mr. Player is less than Bell Co. by $301,447, of 14.06%. This is explained as follows:

1st, Difference due to lower Percent of Secondaries.....	$109,113
2nd, Difference due to Percent of Secondaries on lower Direct Cost.....	192,334
Total	301,447

NOTE.—The amount of $192,334 is partially explained as follows:

Mr. Player's secondary cost percentages applied to certain direct cost items would have amounted to the following:

Secondary on "not used and useful" real estate.....	$90,119
Secondary on C. O. Equipment (toll).....	3,660
Secondary on "changed paving".....	18,927
Total.....	112,706

†Denotes loss.

Item (B), Detail of Large Direct Cost Differences of Appraisal.

Real Estate.

Statement No. 3 attached gives a detailed comparison of appraisals. Mr. Player has appraised all of our land and buildings, but has included in his reported valuation (Direct Cost) only such plant as he considered used and useful.

Mr. Player's.

Item of plant.	Bell Co.	Used and useful.	Not used and useful.	Total Mr. Player's.	Difference.
Land	592,299	181,859	354,245	536,101	56,198
Buildings	640,802	374,142	299,977	604,119	36,683
Total Direct	1,233,101	555,998	584,222	1,140,220	92,881

NOTE.—This "not used and useful" Real Estate, including Mr. Player's secondaries, would amount to:

Direct Cost	584,222
Secondary	90,119
Total	674,341
The Total Difference of Item (B) is	1,057,055
"Not used and useful" Real Estate	584,222
Which leaves unexplained	472,833
Mr. Player's Reduced Valuation (Used and Useful)	92,881
Which leaves unexplained	379,952

403 Central Office Equipment.

While the difference in appraisal is only $52,151, *of* 3.54%, it has been mentioned here that Mr. Player excluded our toll board at Bomont, valued at $24,400. He also transferred $27,751 from C. O. Equipment to Miscellaneous Property (Office Furniture and Fixtures.) This accounts for the total difference of $52,152 in this item of plant.

Balance remaining of Item (B)	$379,952
Explained above	52,151
Which leaves unexplained	327,801

Poles.

Statement No. 4 attached gives an analysis of the $94,048 difference in appraisal. Mr. Player made an error of $2,000.00 in computation, which accounts for the $96,048 difference shown in Item (B).

The Bell Company considered all poles as Specification Class B, in conformity with Mr. Allison's appraisal of June 30, 1912.

(1) Mr. Player classified his poles into Specification Classes A, B, and C.

(2) Mr. Player used a lower unit cost on his Class B pole.

(3) Mr. Player differs slightly in total poles and also as to number of poles of various lengths.

Difference due to (1)	$25,147
" " " (2)	66,086
" " " (3)	2,815
Total	94,048
Mr. Player's error in computation	2,000
Total	96,048
Balance remaining of Item (B)	327,801
Explained above	96,048
Which leaves unexplained	231,753

Statements Nos. 5 and 6 attached give further analysis of material and labor unit costs.

Underground Conduit.

Statements 7, 8, 9 and 10 give a detailed analysis of the difference of $231,753 under this account. Mr. Player's number of trench feet of conduit differed slightly from the Bell inventory. This difference could not be located under the proper class of pavement. Considering that an exact balance could not be obtained, the difference in trench feet was neglected.

404

Statement No. 7, Summary, explains a difference of	$236,103
While the actual difference is	231,753
Making an error of	4,350

The $236,103 difference is explained as follows:

*Net difference due to error in Southwestern T. & T. Co.'s appraisal	$44,446
	52,556
	149,229
Difference due to changed paving	126,177
Difference due to unit costs under dirt	48,061
Difference due to unit costs of repaving	17,419
Total	236,103

*This error was due to using too high a cost for repaving brick and wood block streets. We omitted 2,251 feet of 8-duct conduit. The $44,446 is the net error. With our secondaries added, the amount of the error is increased to $52,474. The paving change, including Mr. Player's secondary cost, would amount to $145,104.

Comparison of Labor and Incidental Costs of Poles According to Appraisal by Mr. Player, Appraisal by the Southwestern Co.

Actual Costs as Determined from Specific and Routine Estimates.

Size of pole.	Mr. Player's appraisal. Labor and incidental unit cost.	Number of poles.	Total cost.	Southwestern Company's appraisal. Labor and incidental unit cost.	Number of poles.	Total cost.
20	$1.1867	35	$41.63	12.38	73	173.74
25 B	1.7798	395	703.02	2.94	756	2,222.64
25 C	1.7078	396	676.29	.....	....	.....
30 A	2.5107	156	391.67	.....	....	.....
30 B	2.4067	972	2,339.31	4.01	1,866	7,482.66
30 C	2.3447	816	1,913.28	.....	....	.....
35 A	3.3690	1,155	3,891.29	.....	....	.....
35 B	3.1690	7,217	22,805.72	5.11	14,509	74,140.99
35 C	3.0560	6,062	18,525.47	.....	....	.....
40 A	4.5862	331	1,518.03	.....	....	.....
40 B	4.5862	2,069	9,488.85	5.98	4,108	24,565.84
40 C	4.2772	1,738	7,433.77	.....	....	.....
45 A	5.1885	170	882.05	.....	....	.....
45 B	5.1885	1,065	5,520.56	7.38	2,216	16,354.08
45 C	4.9805	894	4,452.57	.....	....	.....
50 A	6.3285	288	1,822.61	.....	....	.....
50 B	6.3285	1,797	11,362.32	8.96	3,658	32,775.68
50 C	5.9115	1,509	8,920.45	.....	....	.....
55 A	7.1158	492	3,500.97	.....	....	.....
55 B	7.1158	493	3,508.09	10.63	998	10,608.74

Actual costs as determined from specific and routine estimates. Routine.	Labor.	Incidentals.	Total cost.	No. of units.	Unit cost.
December	1,539	1,565	$3,104	436	$7.119
January	1,274	1,103	2,377	244	9.742
February	865	660	1,525	268	5.691
March	765	747	1,513	103	14.689
April	358	224	582	123	4.732
May	537	481	1,018	243	4.189
June	586	289	875	220	3.977
Totals ..	5,952	5,069	$10,994	1,637	$6.716
Specific Estimates.					
Est. No. and title.					
233 South District	1,171	636	$1,807	249	$7.257
269 Colfax District	286	121	407	82	4.963
278 Gravois Avenue	547	101	648	59	10.982

ST. LOUIS INVENTORY AND APPRAISAL—*Continued*.

Size of pole.	Mr. Player's appraisal. Labor and incidental unit cost.	Number of poles.	Total cost.	Southwestern Company's appraisal. Labor and incidental unit cost.	Number of poles.	Total cost.
60 A	9.4028	120	1,128.34	.....	....	.....
60 B	8.1528	121	986.49	12.27	244	2,993.88
65 B	9.8663	29	286.09	14.91	29	432.39
70 B	10.4719	9	94.25	16.91	11	186.01
Stubs	3.1670	556	1,760.85	7.67	494	3,788.98
Total		28,884	$113,953.78		22,962	$175,752.63
Average Cost per Pole.....			$3.945			
Plus 10% Lost Time.....			.395			
Total Average Cost per Pole.			$4.34	Average Cost per Pole..		$6.067

	Actual costs as determined from specific and routine estimates. Specific Estimates. Labor.	Incidentals.	Total cost.	No. of units.	Unit cost.
2104 and 112 Gravois Ave.	1,006	309	1,315	151	8.709
Totals ..	3,010	$1,167	$4,177	521	$8.017
Total Routine.	5,925	5,069	10,994	1,637	6.716
Total Specific.	3,010	1,167	4,177	521	8.017
Grand Totals.	8,935	6,236	$15,171	2,158	$7.03
Average Cost per Pole.....					$7.03

Comparison

Items of plant.	Direct costs. Mr. Player's appraisal.	Bell Co.'s appraisal.	Difference.
Real Estate:			
Land	$181,856	$592,299	$410,443
Buildings	374,142	640,802	266,660
Equipment:			
C. O. Equipment	1,420,738	1,472,889	52,151
Sub. Sta. Equip. Installed	574,820	585,435	10,615
P. B. X.	200,934	283,319	22,385
Booths and Sp. Fittings	8,268	8,988	720
Total	2,264,760	2,350,631	85,871
Aerial Plant:			
Poles	507,729	303,777	96,048
Accessories	132,233	143,107	10,874
Aerial Wr. Inc. Drops	435,387	460,836	25,449
Aerial Cable	789,828	819,714	29,886
Aerial Terminals	39,238	72,476	33,238
Total	1,904,415	2,099,910	195,495
Underground Plant:			
Multiple Duct	103,963	114,803	10,840
Single & Johnson Duct	768,035	928,431	160,396
Manholes	152,670	167,294	14,624
Laterals	176,131	222,024	45,893
U. G. Cable (Main)	1,114,166	1,136,080	21,914
Loading	38,665	41,613	2,948
U. G. Cable (Sub.)	54,125	57,432	3,607
U. G. Ca. Block and House	51,015	69,478	18,463
U. G. Terminals	46,330	63,399	17,069
Total	2,505,100	2,800,854	295,754
Right-of-Way	27,565	29,722	2,157
Miscellaneous:			
Furniture and Fixtures	59,958	36,257	†23,701
Teams and Vehicles	46,080	46,284	204
Tools	29,922	30,058	136
Supplies	137,719	137,303	†416
Grand Total	7,531,517	8,764,120	1,232,603
% of Secondary to Direct Costs			

f Costs.

Secondary costs.			Reproduction cost.		
Mr. Player.	Bell Company.	Difference.	Mr. Player's appraisal.	Bell Co.'s appraisal.	Difference.
$30,915	$132,585	$101,670	$212,771	$724,884	$512,113
48,638	106,883	58,245	422,780	747,685	324,905
213,111	199,929	†13,162	1,633,849	1,672,818	38,969
86,223	82,445	†3,778	661,043	667,880	6,837
39,140	34,209	†4,931	300,074	317,528	17,454
1,240	1,382	142	9,508	10,370	862
339,714	317,965	†21,749	2,604,474	2,668,596	64,122
76,159	100,607	24,448	583,888	704,384	120,496
19,835	23,846	4,011	152,068	166,953	14,885
65,308	69,494	4,186	500,695	530,330	29,635
118,474	132,745	14,271	908,302	592,459	44,157
5,886	11,737	5,851	45,124	84,213	39,089
285,662	338,429	52,767	2,190,077	2,438,339	248,262
15,594	20,976	5,382	119,557	135,779	16,222
115,205	169,643	54,438	883,240	1,098,074	214,834
22,900	30,568	7,668	175,570	197,862	22,292
26,420	38,813	12,393	202,551	260,837	58,286
167,125	185,765	18,640	1,281,291	1,321,845	40,554
5,800	6,804	1,004	44,465	48,417	3,952
8,119	10,092	1,973	62,244	67,824	5,580
7,652	12,145	4,493	58,667	81,623	22,956
6,950	11,084	4,134	53,280	74,483	21,203
375,765	485,890	110,125	2,880,865	3,286,744	405,789
4,135	4,524	389	31,700	34,246	2,546
.....	.....	.....	59,958	36,257	†23,701
.....	.....	.....	46,080	46,284	204
.....	.....	.....	29,922	30,058	136
.....	.....	.....	137,719	137,303	†416
1,084,829	1,386,276	301,447	8,616,346	10,150,396	1,534,050

. Player..... $14.95
ll Company..... $16.28

Main Underground Cable.

Est. No.	Plac.	Spl.	Yd. sup.	Team.	Total.	Ft.	Plac.	Spl.	Yd. sup.	Team.	Total.
21	49.02	184.53	4.90	44.59	283.04	1,879	.0261	.0982	.0026	.0237	.1506
29	273.07	1,037.80	49.91	207.24	1,568.02	8,208	.0332	.1264	.0060	.0252	.1908
31	143.97	470.08	29.34	175.79	819.18	10,704	.0135	.0439	.0027	.0164	.0765
41	52.24	150.05	10.63	75.66	288.58	2,289	.0228	.0656	.0046	.0331	.1261
42	262.48	240.14	40.47	29.52	572.61	7,927	.0331	.0303	.0051	.0037	.0722
28	465.89	1,293.44	10.36	455.86	2,225.55	22,852	.0204	.0566	.0005	.0199	.0974
Avg.	1,246.67	3,376.04	145.61	988.06	5,756.98	53,859	.0231	.0627	.0072	.0184	.1069

Aerial Cable.

21	38.67	109.49	.76	12.30	161.22	768	.0504	.1426	.0010	.0160	.2100
31	43.36	135.43	3.41	26.27	208.47	1,462	.0297	.0926	.0023	.0180	.1426
33	2,030.28	1,926.23	41.48	712.10	4,710.09	47,943	.0433	.0402	.0009	.0149	.0983
41	182.46	225.13	11.87	85.53	504.99	2,266	.0805	.0994	.0052	.0377	.2228
42	85.18	218.55	10.66	60.62	375.01	2,831	.0301	.0772	.0038	.0214	.1325
58	273.02	249.62	24.23	59.86	606.73	6,126	.0446	.0407	.0039	.0098	.0990
65	170.00	213.34	32.75	64.39	480.48	3,013	.0564	.0708	.0109	.0214	.1595
69	151.12	93.84	12.14	90.02	357.12	5,101	.0296	.0184	.0024	.0176	.0680
70	80.49	133.43	5.33	30.07	249.32	5,029	.0160	.0255	.0011	.0060	.0496
78	296.74	252.51	33.61	124.60	707.46	5,754	.0516	.0439	.0058	.0217	.1230
28	1,985.48	3,010.29	80.52	885.45	5,961.74	49,311	.0403	.0610	.0016	.0180	.1209
Avg.	5,236.80	6,567.86	256.76	2,131.21	14,322.63	129,604	.0412	.0507	.0020	.0165	.1104

(Here follows continuation of St. Louis Inventory and Appraisal, marked page 407.)

Detail by Plant Accounts.

Detail of Large Differences in Appraisal.

408 Property accounts.	Mr. Player's appraisal.	Bell Company's appraisal.	Difference.	Percentage of difference based on Bell appraisal.
Direct Costs	$7,531,517	$8,764,120	$1,232,603	14.06
(A) Secondary Costs	1,084,829	1,386,276	301,447	21.74
Total Cost	$8,616,346	$10,150,396	$1,534,050	15.11
(B) Real Estate:				
Land	$181,856	$592,299	$410,443	69.29
Buildings	374,142	640,802	266,660	41.61
Total Real Estate	$555,998	$1,233,101	$677,103	54.91
Equipment:				
Central Office Equipment	1,420,738	1,472,889	52,151	3.54
Aerial Plant:				
Poles	507,729	603,777	96,048	15.90
Underground Plant:				
Multiple Duct	103,963	114,803	10,840	9.44
Single and Johnson Duct	768,035	928,431	160,396	17.28
Manholes	152,670	167,294	14,624	8.74
Laterals	176,131	222,024	45,893	20.67
Total Underground	$1,200,799	$1,432,552	$231,753	16.18
Total (B)	$3,685,264	$4,742,319	$1,057,055	22.29

(C) Equipment:	Detail of Small Differences in Appraisal.			
Sub-Station Installation	$574,820	$585,435	$10,615	1.81
P. B. X Equipment	260,934	283,319	22,385	7.90
Booths and Special Fittings	8,268	8,988	720	8.01
Total	$844,022	$877,742	$33,720	3.84
Aerial Plant:				
Accessories	$132,233	$143,107	$10,874	7.60
Aerial Wire, including Drops	435,587	460,836	25,449	5.52
Aerial Cable	789,828	819,714	29,886	3.65
Aerial Terminals	39,238	72,476	33,238	45.86
Total	$1,396,686	$1,496,133	$99,447	6.64
Underground Plant:				
Underground Cable (Main)	$1,114,166	$1,136,080	$21,914	1.93
Loading	38,665	41,613	2,948	7.08
Underground Cable (Sub.)	54,125	57,732	3,607	6.25
U. G. Cable, Block & House	51,015	69,478	18,463	26.57
Underground Terminals	46,330	63,399	17,069	26.92
Total	$1,304,301	$1,368,302	$64,001	4.68
Right of Way	27,566	29,722	2,157	7.26
Miscellaneous:				
Furniture and Fixtures	59,958	36,257	†23,701	†65.37
Teams and Vehicles	46,080	46,284	204	.44
Tools	29,922	30,058	136	.45
Supplies	137,719	137,303	†416	†.30
Total	$273,679	$249,902	†23,777	†9.51
Total (C)	$3,846,253	$4,021,801	$175,548	4.36

†Denotes loss.

Mr. Player's.

		Bell Company.	Used and useful.	Not used, useful.	Total used and not used.	Difference between columns 1 and 4.
(1) C. B. 429	Beaumont and Locust (Exchange only)	$43,276	$15,256	$29,354	$44,610	†$1,334
C. B. 5048	Delmar, near Skinker	42,861	39,388	.....	39,388	3,473
C. B. 3565	Fair and Carter	27,135	24,672	.....	24,672	2,463
C. B. 5051-A	Delmar, near Lake	39,520	41,229	.....	41,229	†1,759
C. B. 2123	Grand and McRee	21,625	22,411	.....	22,411	†786
C. B. 3926	Olive, near Vandeventer	69,615	60,106	.....	60,106	9,509
(2) C. B. 274	10th and Olive (Present Building)	199,872	96,600	96,600	193,200	6,672
C. B. 3001	Minnesota, near Loughborough	3,748	3,255	.....	3,255	493
C. B. 793	11th and Sidney Sts.	10,679	10,463	.....	10,463	216
C. B. 349	11th and Chambers	24,897	27,664	.....	27,664	†2,767
(3) C. B. 274	917 Pine Street (Recent Purchase)	6,723	.....	6,723	6,723	.....
(4) C. B. 274	919-21 Pine Street, Store Room (Recent Purchase)	17,175	4,307	2,584	6,891	10,284
(5) C. B. 274	10th and Pine Streets, Corner (Recent Purchase)	20,412	.....	20,412	20,412	.....
(6) C. B. 5260	St. Louis Avenue and Kingshighway Blvd. (Euclid)	49,256	.....	49,256	49,256	.....
		.....	.....	.....	.....	.....
(7) C. B. 2807	Colorado and Wilmington (New South)	5,355	.....	5,366	5,366	.....
(8) C. B. 429	Locust, near Beaumont (Residence)	15,245	.....	15,246	15,246	.....
Other Lease Holds		.....	.....	.....	.....	.....
(9) Store Building, 204 North 10th Street		2,380	.....	2,380	2,380	.....
(10) Store Building, 208 North 10th Street		2,068	.....	2,068	2,068	.....
Pole Yard Buildings		38,960	28,791	.....	28,791	10,169
Total		$640,802	$374,142	$229,977	$604,119	$36,683

Secondary Costs, Bell Company's Appraisal ($648,802) $106,883
Secondary Costs, Mr. Player's Appraisal (604,119) 78,635

Difference in Secondary Cost $28,348

Reproduction Value, Bell Company's Appraisal	$747,685
Reproduction Value, Mr. Player's Appraisal	682,654
Difference in Reproduction Value	$65,031

(1) In handling the property at Beaumont and Locust, Mr. Player divided it into three parts (Local, S. W. Toll and A. T. & T. Toll), on the basis of space occupied by each branch, crediting local business with 34.18%, which he allowed in his appraisal.

(2) Mr. Player estimated the value of the lease holds at 10th and Olive at $150,000—$50,000 less than the Bell Company valuation. The first and second floors are rented to the Swope Shoe Company, so Mr. Player divided the property into two parts on a rental basis, which allowed the Bell Company 50%. Mr. Player allowed 50% of the total value in his appraisal.

(3) 917 Pine Street, not used for telephone purposes. Recently purchased for proposed Main Exchange Building.

(4) The property at 919-21 Pine Street is a two-story building. All of the second floor and half of the first floor is used by our Company as a supply room. The other half is rented. Mr. Player subdivided this property on a rental basis, allowing 62½% of the total valuation in this appraisal. Property was purchased for proposed Main Exchange Building.

(5) 10th and Pine not used for telephone purposes. Purchased for proposed Main Exchange Building.

(6) St. Louis Avenue and Kingshighway, Euclid Exchange Building (not in use).

(7) Colorado and Wilmington, new South Office (not out in service).

(8) Locust, near Beaumont, property in rear of Bomont Exchange.

(9) and (10) 204 and 208 North 10th Street, small buildings on 10th & Pine property. (See No. 5.)

Total Real Estate (Reproduction Cost) Bell Company	$1,472,569
Mr. Player (Used and Useful)	635,551
Difference with Bell Company	$837,018
Mr. Player (Used and Not Used), including Secondary Cost	$1,309,892
Difference with Bell Company	$162,677

Mr. Player's.

			Bell Company.	Used and useful.	Not used, useful.	Total used and not used.	Difference between columns 1 and 4.
(1)	C. B. 429	Beaumont and Locust (Exchange only)	$12,500	$4,273	$8,227	$12,500	.....
	C. B. 5048	Delmar, near Skinker	6,000	6,000	.....	6,000	.....
	C. B. 3565	Fair and Carter	2,530	2,525	.....	2,525	5
	C. B. 5051-A	Delmar, near Lake	5,000	6,750	.....	6,750	†1,750
	C. B. 2123	Grand and McRee	6,000	9,084	.....	9,084	†3,084
	C. B. 3926	Olive, near Vandeventer	15,000	12,500	.....	12,600	2,500
(2)	C. B. 274	10th and Olive (Present Building)	200,000	75,000	75,000	150,000	150,000
	C. B. 3001	Minnesota, near Loughborough	500	511	.....	511	†11
	C. B. 793	11th and Sidney Sts	2,900	2,900	.....	2,900	.....
	C. B. 349	11th and Chambers	2,500	2,500	.....	2,500	.....
(3)	C. B. 274	917 Pine Street (Recent Purchase)	43,317	.....	43,317	43,317	.....
(4)	C. B. 274	919-21 Pine Street, Store Room (Recent Purchase)	.....	59,813	35,887	95,700	.....
(5)	C. B. 274	10th and Pine Streets, Corner (Recent Purchase)	275,000	.....	170,907	170,907	8,593
(6)	C. B. 5260	St. Louis Avenue and Kingshighway Blvd. (Euclid)	3,900	.....	3,900	3,900	.....
			2,400	.....	2,400	2,400	.....
(7)	C. B. 2907	Colorado and Wilmington (New South)	2,247	.....	2,107	2,107	140
(8)	C. B. 429	Locust, near Beaumont (Residence)	12,500	.....	12,500	12,500	.....
	Other Lease Holds		5	.....	.....	.....	.....
(9)	Store Building, 204 North 10th Street		.....	.....	.....	.....	.....
(10)	Store Building, 208 North 10th Street		.....	.....	.....	.....	.....
	Pole Yard Buildings		.....	.....	.....	.....	.....
	Total		$592,299	$181,856	$354,245	$536,101	$56,198

Secondary Costs, Bell Company's Appraisal ($592,299) $132,585
Secondary Costs, Mr. Player's Appraisal (536,101) 91,137

Difference in Secondary Cost $41,448

Reproduction Value, Bell Company's Appraisal	$724,884
Reproduction Value, Mr. Player's Appraisal	627,238
Difference in Reproduction Value	$97,646

(1) In handling the property at Beaumont and Locust, Mr. Player divided it into three parts (Local, S. W. Toll and A. T. & T. Toll), on the basis of space occupied by each branch, crediting local business with 34.18%, which he allowed in his appraisal.

(2) Mr. Player estimated the value of the lease holds at 10th and Olive at $150,000—$50,000 less than the Bell Company valuation. The first and second floors are rented to the Swope Shoe Company, so Mr. Player divided the property into two parts on a rental basis, which allowed the Bell Company 50%. Mr. Player allowed 50% of the total value in his appraisal.

(3) 917 Pine Street, not used for telephone purposes. Recently purchased for proposed Main Exchange Building.

(4) The property at 919-21 Pine Street is a two-story building. All of the second floor and half of the first floor is used by our Company as a supply room. The other half is rented. Mr. Player subdivided this property on a rental basis, allowing 62½% of the total valuation in this appraisal. Property was purchased for proposed Main Exchange Building.

(5) 10th and Pine not used for telephone purposes. Purchased for proposed Main Exchange Building.

(6) St. Louis Avenue and Kingshighway, Euclid Exchange Building (not in use).

(7) Colorado and Wilmington, new South Office (not cut in service).

(8) Locust, near Beaumont, property in rear of Bomont Exchange.

(9) and (10) 204 and 208 North 10th Street, small buildings on 10th & Pine property. (See No. 5.)

Total Real Estate (Reproduction Cost) Bell Company	$1,472,569
Mr. Player (Used and Useful)	635,551
Difference with Bell Company	$837,018
Mr. Player (Used and Not Used), including Secondary Cost	$1,309,892
Difference with Bell Company	$162,677

Direct Cost.

1	2	3	4	5	6	7	8	9
Size of poles.	No. of poles in Bell inventory.	Total of Mr. Player's A, B, & C class poles.	Mr. Player's A pole unit cost.	Mr. Player's B pole unit cost.	Mr. Player's C pole unit cost.	Bell's B pole unit cost.	Mr. Player's total A, B, & C poles with Bell's B unit cost applied (cols. 3 & 7).	Mr. Player's total A, B, & C poles with his B unit cost applied (cols. 3 & 4).
20.....	73	35	.....	3.64	.....	5.22	183	127
25.....	756	791	.....	5.86	5.18	7.12	5,632	4,635
30.....	1,866	1,944	14.81	9.82	7.40	11.59	22,531	19,090
35.....	14,509	14,434	17.78	15.60	12.00	17.75	256,204	225,170
40.....	4,108	4,138	22.00	19.36	17.10	20.11	83,210	80,112
45.....	2,216	2,128	25.00	23.14	20.16	25.48	54,221	49,242
50.....	3,658	3,594	29.77	26.63	22.61	29.46	105,879	95,708
55.....	998	985	40.95	30.84	.....	34.68	34,160	30,377
60.....	244	241	52.02	42.03	.....	46.67	11,247	10,129
65.....	29	29	.....	52.90	.....	58.49	1,696	1,534
70.....	11	9	.....	58.97	.....	66.24	596	531
Total.....	28,468	28,328	.....	.....	.....	.....	15,323	12,466
Stubs.....	494	556	22.42	.....	.....	27.56	10,075	5,755
Concreting.....	1,353	1,367	4.21	.....	.....	7.37	600,962	534,876

Comparison of Mr. Player's and Bell Company's Pole Values.

Direct Cost.

1	10	11	12	13	14	15	16
Size of poles.	Loss due to unit cost on B class poles, dif. between cols. 8 & 9.	Mr. Player's total A, B, & C poles with his classification A, B, & C unit cost applied.	Loss due to Mr. Player's classification of poles, difference between cols. 9 & 11.	Total of columns 10 & 12.	Bell units with Bell unit cost applied.	Loss due to decrease in Mr. Player's number of poles, difference between cols. 8 & 14.	Total of columns 10, 12, and 15, or difference between cols. 11 & 14.
20.....	†86	127	....	†86	381	†198	†254
25.....	†997	4,396	†269	†1,266	5,383	249	†1,017
30.....	†3,441	17,803	†1,197	†4,638	21,627	904	†3,734
35.....	†31,034	205,865	†19,305	†50,339	257,535	†1,331	†51,670
40.....	†3,103	77,058	†3,054	†6,157	82,612	603	†5,554
45.....	†4,979	46,909	†2,333	†7,312	56,464	†2,243	†9,555
50.....	†10,171	90,546	†5,162	†15,333	107,765	†1,886	†17,219
55.....	†3,783	35,351	4,974	1,191	34,611	†451	740
60.....	†1,118	11,328	1,199	81	11,387	†140	†59
65.....	†162	1,534	....	†162	1,696	....	†162
70.....	†65	531	....	†65	729	†133	†198
Total.....	†2,857	12,466	....	†2,857	13,615	1,708	†1,149
Stubs.....	†4,320	5,755	....	†4,320	9,972	103	†4,217
Concreting.....	†60,086	509,729	†25,147	†91,233	603,777	†2,815	†94,048

†Denotes loss.

Summary.

The Southwestern Telegraph & Telephone Co. Appraisal	$603,777	
Mr. Player's Appraisal	509,729	
Difference (Direct Cost)	94,048	
The Bell Company considered all poles to be Class "B."		
Mr. Player classified all poles into Classes "A," "B" and "C."		
Mr. Player's units of cost were less than the Bell Company's.		
Mr. Player's number of units was less than the Bell Company's.		
Valuation based on Mr. Player's total number of units and the Bell "B" pole unit cost (Col. 8)	$600,962	
Valuation based on Mr. Player's total number of units and less "B" pole unit cost (Col. 9)	534,876	
Difference in valuation on a "B" pole unit cost basis (Col. 10)		$66,086
Valuation based on Mr. Player' total number of units and his "B" pole unit cost (Col. 9)	534,876	
Valuation as submitted by Mr. Player to the Commission (Col. 11)	509,729	
Difference in valuation between Mr. Player's "B" pole valuation and his actual valuation (Col. 12)		25,147
Valuation as submitted to the Commission by the Bell Company (Col. 14)	603,777	
Valuation based on Mr. Player's total number of units and the Bell "B" pole unit cost (Col. 8)	600,962	
Difference in valuation due to difference in number of pole units		2,815
Total Difference (Direct Cost)		$94,048

Comparison of Mr. Player's and Bell Company's Unit Costs.

Divided Into Material and All Other Costs.

Mr. Player's.

Poles, size and classification.	Number of poles		Total material.	Material value.	Average value.	Bell material less supply expense.	Mr. Player's average, labor and profit.	Bell labor, incidentals, & supply expense.
20		35	2.00	70.00	2.00		1.64	
25	395		3.37	1,331.15			2.49	
25 C	396		2.83	1,120.68			2.35	
Total 25' C & B....		791			3.10	3.41	2.42	3.71
30 A	156		10.70	1,669.20			4.11	
30 B	972		6.28	6,104.16			3.54	
35 C	816		4.15	3,386.40			3.25	
Total 30' A, B & C..		1,944			5.74	6.35	3.46	5.24
35 A	1,155		12.45	14,379.75			5.33	
35 B	7,217		10.70	77,221.90			4.90	
35 C	6,062		7.68	45,768.10			4.45	
Total 35' A, B & C..		14,434			9.62	10.82	4.74	6.93
40 A	331		15.15	5,014.65			6.85	
40 B	2,069		12.75	26,379.75			6.61	
40 C	1,738		10.93	18,996.34			6.17	
Total 40' A, B & C..		4,138			12.18	11.98	6.44	8.13
45 A	170		17.10	2,907.60			7.99	
45 B	1,064		15.33	16,311.12			7.81	
45 C	894		12.85	11,487.90			7.31	
Total A, B & C....		2,128			14.43	15.48	7.64	10.00

Comparison of Mr. Player's and Bell Company's Unit Costs—Continued.

Poles, size and classification.	Number of poles		Total material.	Material value.	Average value.	Bell material less supply expense.	Mr. Player's average, labor and profit.	Bell labor, incidentals, & supply expense.
50 A	288		20.10	5,768.80			9.67	
50 B	1,797		17.25	30,998.25			9.38	
50 C	1,509		14.05	21,201.45			8.56	
Total 50' A, B & C..		3,594			16.13	17.44		9.06 12.02
55 A	492		29.40	14,464.80			11.55	
55 B	493		20.21	9,963.53			10.63	
Total 55' A & B....		985			24.80	20.34		11.09 14.25
60 A	120		36.95	4,434.00			15.07	
60 B	121		29.24	3,538.04			12.79	
Total 60' A & B....		241			33.08	29.56		13.93 17.11
65 A								
65 B	29		37.24	1,079.96				
Total 65' A & B....		29			37.24	37.65		15.66 20.84
70 A								
70 B	9		42.09	378.81				
Total 70' A & B.....		9			42.09	42.55		16.88 23.69
Stubs		556	16.90	9,396.40	16.90	17.09		5.52 10.47
Concreting Poles		1,367	1.58	2,159.86	1.58	2.44		2.63 4.93

Size of poles.	Cost of poles f. o. b. St. Louis.					Cost of paint and carbolineum.				Cost of shaving, framing, and painting.			Cost of digging and setting.		
	No. of poles in Mr. Player's inventory.	Mr. Player's cost.	Mr. Player's average cost.	Bell Company's cost.	Difference.	Mr. Player's cost.	Mr. Player's average cost.	Bell Company's cost.	Difference.	Mr. Player's cost.	Bell Company's cost.	Difference.	Mr. Player's cost.	Bell Company's cost.	Difference.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
20	35	1.75	1.75	....	....	.25	....	....	....	.2176	....	....	.6875	....	....
25-B	395	3.03	2.78	3.07	*.29	.34	.32	.34	*.02	.3115	.39	*.05	1.0417	1.80	*.76
25-C	396	2.53	....	....	....	.30	....	....	....	.3115	....	....	1.0417	....	....
30-A	156	10.15	....	....	....	.55	....	....	....	.5065	....	....	1.3332	....	....
30-B	972	5.90	5.33	5.87	*.54	.48	.46	.48	*.02	.5065	.66	*.15	1.3332	2.45	*1.12
30-C	816	3.73	....	....	....	.42	....	....	....	.5065	....	....	1.3332	....	....
35-A	1,155	11.70	....	....	....	.75	....	....	....	.6933	....	....	1.6670	....	....
35-B	7,217	10.06	8.89	10.18	*1.29	.64	.62	.64	*.02	.6933	.97	*.28	1.6670	3.00	*1.33
35-C	6,062	6.97	....	....	....	.58	....	....	....	.6933	....	....	1.6670	....	....
40 A	331	14.20	....	....	....	.95	....	....	....	.8065	....	....	2.6460	....	....
40-B	2,069	11.90	11.35	12.13	*.78	.85	.83	.85	*.02	.8065	1.17	*.36	2.6460	3.45	*.80
40-C	1,738	10.15	....	....	....	.78	....	....	....	.8065	....	....	2.6460	....	....

*Indicates loss.

Detailed Analysis and Comparison of Mr. Player's and Bell Unit Cost—Continued.

Size of poles.	Cost of poles f. o. b. St. Louis.					Cost of paint and carbolineum.				Cost of shaving, framing, and painting.			Cost of digging and setting.		
	No. of poles in Mr. Player's inventory.	Mr. Player's cost.	Mr. Player's average cost.	Bell Company's cost.	Difference.	Mr. Player's cost.	Mr. Player's average cost.	Bell Company's cost.	Difference.	Mr. Player's cost.	Bell Company's cost.	Difference.	Mr. Player's cost.	Bell Company's cost.	Difference.
45-A	176	15.95	....	....	....	1.15	....	....	....	1.0000	....	....	2.7710	....	....
45-B	1,064	14.28	13.41	14.45	*1.04	1.03	1.01	1.03	*.02	1.0000	1.41	*.41	2.7710	4.30	*1.53
45-C	894	11.90	....	....	....	.95	....	....	....	1.0000	....	....	2.7710	....	....
50-A	288	18.70	....	....	....	1.40	....	....	....	1.3225	....	....	3.1665	....	....
50-B	1,797	16.02	14.91	16.21	*1.30	1.23	1.21	1.23	*.02	1.3225	1.71	*.39	3.1665	5.30	*2.13
50-C	1,569	12.90	....	....	....	1.15	....	....	....	1.3225	....	....	3.1665	....	....
55-A	492	27.80	....	....	....	1.60	....	....	....	1.6340	....	....	3.4165	....	....
55-B	493	18.75	23.27	18.97	4.30	1.46	1.53	1.46	.07	1.6340	1.97	*.34	3.4165	6.40	*3.96
60-A	120	35.60	....	....	....	1.35	....	....	....	1.7400	....	....	4.3125	....	....
60-B	121	27.57	31.57	27.89	3.68	1.67	1.51	1.67	*.16	1.7400	2.19	*.45	4.3125	7.80	*3.49
65-B	29	35.40	35.40	35.81	*.41	1.84	1.84	1.84	....	1.8925	2.50	*.61	4.5625	9.25	*4.69
70-B	9	39.93	39.93	40.39	*.46	2.16	2.16	2.16	....	1.9725	2.78	*.81	5.3333	10.90	*5.57
Stubs	556	16.08	16.08	16.27	*.19	.82	.82	.82	....	.4913	.106	*.57	1.6670	4.80	*3.13

*Indicates loss.

Size of poles.	Cost of hauling poles and excess earth (Mr. Player's figures plus his loading and unloading charge).				Mr. Player's charge for lost time and profit.	Mr. Player's average charge for lost time and profit.	Bell Company's charge for supervision and supply expense.	Difference.	Mr. Player's average cost in place.	Bell Company's cost in place.	Difference between cols. 25 and 26, or sum of cols. 6, 10, 13, 16, 20, and 24.
	Mr. Player's cost.	Mr. Player's average cost.	Bell Company's cost.	Difference.							
1	17	18	19	20	21	22	23	24	25	26	27
20	.2816	....	....	....	.4487	....	....	....	3.64	5.22	*1.58
25-B	.4266	.39	.75	*.36	.7080	.67	.77	*.10	5.52	7.12	*1.60
25-C	.3546	....	....	....	.6408	....	....	....	....	....	....
30-A	.6710	....	....	....	1.6011	....	....	....	....	....	....
30-B	.5670	.55	.90	*.35	1.1307	1.07	1.23	*.16	†9.20	11.59	*2.39
30-C	.5050	....	....	....	.9045	....	....	....	....	....	....
35-A	1.0087	....	....	....	1.9569	....	....	....	....	....	....
35-B	.7997	.77	1.14	*.37	1.7360	1.61	1.82	*.21	14.26	17.75	*3.49
35-C	.6957	....	....	....	1.3956	....	....	....	....	....	....
40-A	1.0087	....	....	....	2.4586	....	....	....	....	....	....
40-B	1.0087	.92	1.36	*.44	2.2180	2.14	2.15	*.01	**18.62	20.11	*1.49
40-C	.7997	....	....	....	1.9777	....	....	....	....	....	....
45-A	1.4175	....	....	....	2.7989	....	....	....	....	....	....
45-B	1.4175	.35	1.57	*.34	2.6189	2.51	2.62	*.11	22.04	25.42	*3.44
45-C	1.2095	....	....	....	2.3281	....	....	....	....	....	....

*On 30 ft. B pole Mr. Player's unit cost is in error 10c. (Addition too low.)

**On 40 ft. A, B and C poles, Mr. Player's unit costs are in error 43c, 43c and 40c. (Additions too high.)

Detailed Analysis and Comparison of Mr. Player's and Bell Unit Cost—Continued.

Size of poles.	Cost of hauling poles and excess earth (Mr. Player's figures plus his loading and unloading charge).				Mr. Player's charge for lost time and profit.	Mr. Player's average charge for lost time and profit.	Bell Company's charge for supervision and supply expense.	Difference.	Mr. Player's average cost in place.	Bell Company's cost in place.	Difference between cols. 25 and 26, or sum of cols. 6, 10, 13, 16, 20, and 24.
	Mr. Player's cost.	Mr. Player's average cost.	Bell Company's cost.	Difference.							
1	17	18	19	20	21	22	23	24	25	26	27
50-A	1.6395	....	....	....	3.3429	....	....	....	....	....	....
50-B	1.8385	1.66	1.95	*.29	3.0529	2.91	3.06	*.13	25.19	29.46	*4.27
50-C	1.4224	....	....	....	2.6512	....	....	....	....	....	....
55-A	2.0653	....	....	....	4.4316	....	....	....	....	....	....
55-B	2.0653	2.07	2.26	*.19	3.5116	3.97	3.62	.35	35.88	34.68	1.21
60-A	3.3503	....	....	....	5.6703	....	....	....	....	....	....
60-B	2.1003	2.72	2.32	.40	4.6353	5.15	4.80	.35	47.00	46.67	.33
65-B	3.4103	3.41	3.16	.25	5.7965	5.80	5.93	*.13	52.90	58.49	*5.59
70-B	3.6761	3.68	3.23	.45	6.4072	6.41	6.78	*.37	z**58.97	66.24	*7.27
Stubs	1.0087	1.01	1.81	*.80	2.3567	2.36	2.80	*.44	22.42	27.56	*5.14

*On 30 ft. B pole, Mr. Player's unit cost is in error 10c. (Addition too low.)
**On 40 ft. A, B and C poles, Mr. Player's unit costs are in error 43c, 43c and 40c. (Additions too high.)
z*On 70 ft. B pole, Mr. Player's unit cost is in error 51c. (Addition too low.)
*Indicates loss.

415 *Underground Conduit.*

Summary.

Loss due to S. W. T. & T. Company's error in *in* figuring Brick and Wood Block paving and omission of 2,251 feet of 8-duct multiple tile conduit	$4,446
Loss due to change in paving	126,177
Loss due to difference in unit costs under dirt	48,061
Loss due to difference in unit costs of repaving	17,419
Total Loss	$236,103
The S. W. T. & T. Company's Original Appraisal	$1,432,552
Mr. Player's Original Appraisal	1,200,790
Difference	$231,753

416 *Comparison of Underground Conduit.*

Single and Multiple Duct.

Figures originally submitted by Southwestern Tel. & Tel. Co.—Totals.		
Multiple Duct	114,803	
Single Duct	928,431	
(*a*)	1,043,234	
Corrected totals due to error in figuring cost of repaving Brick and Wood Block and omission of 2,251 feet 8-duct multiple tile in St. Louis County.		
Multiple Duct	115,104	
Single Duct	896,534	
(*b*)	1,011,638	
(*c*) Loss due to S. W. T. & T. Co. error (*a*)—(*b*)		$31,596
Revised S. W. T. & T. Co. value	1,011,168	
Revised S. W. T. & T. Co. Unit Costs and Mr. Player's Units	921,750	
(*d*) Loss due to change in paving		89,888
S W. T. & T. Unit Cost under dirt and Mr. Player's Units	659,624	
Mr. Player's Unit Costs under dirt and Mr. Player's Units	619,122	
(*e*) Loss due to Unit Costs under dirt		40,502

S. W. T. & T. Unit Costs of Paving and Mr. Player's Units	266,199	
Mr. Player's Unit Costs of Paving and Mr. Player's Units	252,649	
(*f*) Loss due to Unit Costs of Paving		13,560
Total Loss		$175,536
Commission Figures, Multiple Duct	103,963.	
Single Duct	768,035.	
	871,998	
Difference between S. W. T. & T. Original figures		$171,236

Difference is due to error in total trench feet of single duct conduit.

417 Manholes.

Loss due to S. W. T. & T. error in unit cost repaving Brick and Wood	$1,140
Loss due to difference in unit cost under dirt	5,807
Loss due to difference in unit cost—Paving	116
Loss due to difference in paving	7,558
	14,621
Original S. W. T. & T. Appraisal	167,294
Mr. Player's original Appraisal	152,670
	14,624

Error of $3.00 is due to prorating units and unit costs.

Laterals.

Loss due to S. W. T. & T. error	$11,710
Loss due to change in paving	28,731
Loss due to unit cost under dirt	1,752
Loss due to unit cost—Paving	3,753
Total Loss	45,946
Southwestern T. & T. Co. Appraisal	222,024
Mr. Player's Appraisal	176,131
	45,893

This discrepancy of $53.00 is due to error in Mr. Player's figures.

418 (*b*) The witnesses of the Southwestern Company testified that the reproduction cost new less depreciation of the Southwestern Company's property in the State as a whole, as of June 30,

1919, was $31,355,278.00. The prices used in estimating the reproduction cost new less depreciation of the Southwestern Company's property in the State of Missouri, were not strictly the prices prevailing as of June 30, 1919, the date of the inventory and appraisal.

In regard to the prices used in estimating the reproduction cost new and the reproduction cost new less depreciation of the Southwestern Company's property in the State of Missouri as of June 30, 1919, the engineer testified:

419 The prices used are about 25 per cent higher than pre-war prices, but the prices in effect today are 45 to 50 per cent higher than pre-war prices.

Wages today of employes in the plant department are 50 per cent higher than they were in 1915. The average wage for employes in the plant department in 1915 was $63.00 per month; it is now $97.00. The exact percentage of increase was 49.75 per cent. The greater portion of that increase was made during the latter part of 1918 and in 1919.

In the cost of constructing a telephone plant the items to be considered are: first, material; second, labor; and, third, incidental items.

Q. Have you any doubt as to the correctness of your figures on the increase in the labor item?

A. None whatever.

Q. And it is forty-nine and a fraction per cent?

A. Yes, sir.

Q. So that if you go out to put up a telephone exchange you have got to count that the labor will cost you along at least fifty per cent more than it did in 1915?

A. Yes.

Q. And there is no estimate about that?

A. No, sir.

Q. That is based on actual figures?

A. Yes, sir.

Q. Now, how about your material?

A. Well, other employers of labor have undoubtedly had the same experience we have had. And since labor enters into the cost of production of all commodities, the cost of those commodities has gone up. We are paying for telephone material approximately fifty per cent more than we were paying in the period prior to the war, 1914, for example, as compared with today.

Q. How much more for copper? How much in those two years for copper? Do you remember?

A. The increase in the cost of copper is over sixty per cent over 1914. That is a rough estimate. Approximately that.

Mr. Hamilton:

Q. At present prices?

A. Yes.

Q. It is lower than it was a year ago?

A. It is approximately the same. About twenty-three cents.

Mr. Gleed:

Q. How about these incidentals you spoke of——

A. The increase in incidentals has been greater than the increase in labor or material. The item of team hire, we are paying practically twice as much as we paid prior to the war. Board for construction gangs has gone up greatly. We are paying more than fifty per cent increase for board. Of course railroad, traveling expenses have greatly increased. And the cost of operating vehicles of all kinds has gone up. The first cost of the vehicles has increased, and the cost of operation. The cost of repairs, the cost of repair parts has increased. The price of gasoline has gone up, affecting operating cost of motor vehicles. In fact, everything we use has gone up in price. A fifty per cent increase all round would not be too much.

Q. Automobiles have gone up during that period, have they?

A. Yes, they have.

Q. If you had an automobile in 1914 or 1915 and if you have it still and the price has gone up what effect has that on the value of the automobile that you have?

A. Are you talking about my particular automobile?

Q. Does the value of second hand automobiles go up along
420 with the price of new automobiles; I am asking, as a matter of fact?

A. Yes, it does. I bought an automobile myself, a very modest sort of automobile, in 1917, for which I paid $785.00, and something additional for freight. After running that along for about two years I was made an offer of more than I paid for the automobile, and I was greatly tempted to sell it, only I knew that if I did that I would be unable to buy as good an automobile for the same price.

Q. So that the increase in cost new of course affects the value of the commodity in whos-ever hands it may be?

A. That is true. Yes.

Cable which has served its usefulness can now be sold for more as junk than it cost new in 1913.

Q. Now, Mr. Robinson, would you be able today, or this month, to get any responsible persons to contract forthwith to reproduce any one of those exchanges at the value or amount of money that you have named in your inventory?

A. I don't believe I would.

Q. You said that in constructing a telephone exchange labor would be 50 per cent higher than it would have been in 1914 or 1915, and materials would be 50 per cent higher. And yet, some of these inventories dating quite a distance back you have added only twenty-five per cent. There is an apparent discrepancy there. What is the explanation of that?

A. Well, there is a possible chance that a particular exchange would not cost fifty per cent more, and in order to be conservative I added twenty-five per cent. That is, I think telephone property as a whole would cost fifty per cent more to construct today than it did

before the war, but there may be some peculiarity about any individual exchange which would make it unwise for me to state that that particular exchange would cost fifty per cent more, although I am of the opinion that any exchange probably would cost fifty per cent more.

Mr. Moon: That is what I wanted to bring out.

Q. What do you mean by the statement pre-war prices?

A. In 1914 and 1913 we had an era of extremely low prices. And the prices in 1915 did not go up until very late in the year. The prices used in the Springfield case included the very low prices prevailing in 1913 and 1914 and the increased prices prevailing in 1916. The average for the whole would be the normal pre-war prices. It certainly would be a good deal more than 25 per cent lower than the prices prevailing today.

Q. Then when you use the term pre-war prices what period of time do you refer to?

A. I refer to the period immediately prior to the war—three, four or five years.

Q. You refer to a period of time of several years, commencing with 1916 and dating back three, four or five years?

A. Yes; I mean in a general way the prices prevailing before the cost of commodities and labor were affected by the world war.

421 Q. You don't, then, refer to the date of the entrance of this country into the world war?

A. No.

* * * * * * *

Commissioner Flad:

Q. Do I understand that, for each of these thirty-four plants, you have a complete inventory of all property, showing the unit prices you have assumed?

A. Showing quantities as of the date the inventory was made.

Q. And the unit prices you have assumed?

A. Yes.

Q. That can be checked over, and prices put on?

A. Yes. Of course, there is a tremendous quantity of units, so that it would require a great amount of work. The units in the St. Louis exchange constitute a great quantity of papers.

The bases of all these valuations, Exhibits 164 to 211, both inclusive, are unit prices 25 per cent higher than the pre-war unit prices, except a few very small towns which were valued on the per station basis. There are seven of these towns, and they are as follows: Bloomfield, Blue Springs, Campbell, Dexter, East Prairie, Smithville and Republic. All of the towns valued on the per station basis are magneto towns. They are all small towns having from 25 to 200 stations. Inventories were made on the basis of unit prices 25 per cent above pre-war prices of eleven or twelve of these small towns which were representative or had the same characteristics

of these towns that they were unable to evaluate, and from those twelve towns we have arrived at a per station cost of construction, and we applied that to this, about thirty-six towns, in the entire State of Missouri. The seven towns just named are seven of those for which valuations were submitted in Exhibits 164 to 211, both inclusive. Exhibit 87 shows how each valuation in each town was made up.

422 The witnesses for the Southwestern Company testified that the reproduction cost of the Southwestern Company's structural plant, not including working capital and going value as of June 30, 1919, was $28,454,488.00.

The witnesses of the Southwestern Company testified that the reproduction cost new less depreciation as of June 30, 1919, on the same basis as the state-wide reproduction new less depreciation of

(*a*) the Caruthersville exchange, was $52,574.00,

(*b*) the St. Louis exchange was $15,532,237.00, and

(*c*) the Springfield exchange was $1,328,862.00.

(*c*) The witnesses of the Southwestern Company testified that all of its property included in the figures presented by it was used or useful in giving telephone service to the public in Missouri. The Commission introduced the record in the original St. Louis case, which was tried in 1913 and 1914 and valued as of December 31, 1913. In the decision in the St. Louis case, the Commission excluded certain property as not used or useful in the Southwestern Company's business. The evidence introduced in said St. Louis case on whether or not this property was, as of December 31, 1913, used or useful in the Southwestern Company's business is as follows:

The engineer for the Southwestern Company testified in part as follows:

423 "All of the pieces of real estate enumerated in the inventory and appraisal of the St. Louis and Clayton exchanges are used for central offices except the following:

1. Lot in City Block 5260 at St. Louis and Euclid avenues, City of St. Louis, is used for a school for instructing the company's employes.

2. City Block 275, Tenth and Pine Streets, City of St. Louis is rented to tenants. It is the company's intention to erect a building there within a short time.

3. City Block 928 on Locust street, City of St. Louis is leased to a tenant.

4. City Block 2907, Colorado avenue and Wilmington road; on this property the company is erecting a new central office building, which is not yet in use.

5. City Block 274, Pine street, which is east of the property listed in the exhibit as City Block 274, Tenth and Pine streets is leased to a tenant.

These inventories and appraisals do not include the receivers,

transmitters and induction coils which belong to the American Telephone and Telegraph Company.

The real estate in City Block 274, Pine Street, St. Louis, has been rented out. The public has been getting the benefit of this directly by having the rent charged up as a part of the company's revenue. Also the company intends to erect a central office building on that property and we thought it was wise to purchase that property at that time."

424 Mr. McSHANE, the commission's accountant, testified on behalf of the commission:

We prepared an exhibit on the plant in service comparing the figures as shown by us with those shown by the company. This statement includes the cost of the general equipment, office furniture, tools, vehicles, also reserve for depreciation, which we have apportioned to the various exchanges on the basis shown on Exhibit No. 2. Exhibit No. 1 is shown on page 18 of the report. This exhibit shows the St. Louis, Clayton, East St. Louis and Tri-Cities exchanges, and we have combined the other exchanges as a whole. The figures as shown in the company's statement for St. Louis amount to $8,209,706.93.

Q. Where is that?

A. The St. Louis exchange. The figures as shown by our statement amount to $7,398,478.60, showing that the company's figures are over our figures by the amount of $811,228.33. On page 20, Exhibit No. 3, we make a comparison of the figures shown by the company with our figures and show the differences. There are a few items in which there is a difference; one is land devoted to operations, showing a difference of $282,316.60. I have already explained that item by stating the land devoted to operations as shown by the company included land—well, I will correct that statement by saying that the account shown by the company of land included land which had not been devoted to operations, and we have reduced that account by $282,316.60.

425 Q. Is there any place in your report where you set forth the details of that item so as to show what lands you say should not be included and lands devoted to operations?

A. Yes, sir.

Q. I didn't want to interrupt you; go on in your own way.

A. I think it is well to take that up right now. On page 21, there is a statement showing an explanation of this difference, the total differences being $282,316.60 on that one particular account and is explained as follows: Balance per company's statement is $322,474.98; balance per books, $322,463.24. There was a slight difference there of $11.74. Now our deductions from the account represent the Beaumont addition of $9,297.00; Euclid exchange, $1,800.00; King's Highway, $2,375.00; Tenth and Pine streets, northeast corner, $216,370.82; 917 Pine street, $50,040.00, making a total of the lands not devoted to operations of $279,882.82. There was charged to this account other miscellaneous prepaid expenses, representing the portion of the strike expense of $175.19. Cost of

the land, the site for the new south exchange which we have deducted from this account and included under construction work and progress, $2,246.85, making a total deduction of $282,304.86, leaving a net of $282,316.60.

Q. Mr. McShane, what was the reason that you took out these different exchanges and pieces of real estate from the land devoted to operations?

A. The reason of that was to arrive at the figure of the company's investment in land and buildings and plant which are being utilized for telephone purposes, upon which the company would expect a reasonable return. Outside investments of this nature are
426 items upon which the company could not expect a return. For example, there is 10th and Pine streets. The building at 10th and Pine I understand is a hotel, and is not being utilized for telephone purposes. It is rented out. Part of the building is rented out for a pool room and there is part of the building that is vacant.

Q. I can see that, but why do you take out the Beaumont exchange and Euclid exchange and King's Highway exchange? Aren't they used in connection with telephone operations?

A. The Beaumont addition is the house next to it, I understand, the Beaumont exchange; it is a building that is rented. Euclid exchange is the exchange that was built on King's Highway and St. Louis avenue, but has never been utilized for telephone purposes. The exchange was located, and has been standing there for several years I understand. I don't know the exact date, and it has not been utilized for telephone purposes and it may sometime in the future be utilized. There is a little further explanation in connection with that which I will make later, but I might as well make it now, that the company is utilizing a portion of that exchange for their engineers' school. That is, they have the engineers who are being trained for telephone work located in the exchange at the present time. In my report I make mention that a reasonable rental should be allowed for the space occupied by them, but I have taken out the entire amount of the building and the land from the plant investment, and a reasonable amount should be allowed for that space that is occupied by them. King's Highway, that represents a piece of land adjoining the Euclid exchange which is a vacant lot, and Tenth and Pine street as I mentioned, the
427 northeast corner is a hotel and the building is rented out. 917 Pine street, I think a portion of that is being occupied at the present time as a store room by the company. I have also mentioned that reasonable rental should be allowed to the company for a portion of that building that is occupied as a store room. Now there is another item of $5,000, ground lease, which represents the lease of the ground at 10th and Olive streets. I have set that item up as a separate item and it hasn't really been reduced or taken out of the capital assets, but has been set up as a separate account. I have transferred it out of land and put it into the account called ground lease. Buildings devoted to operations——

Q. What page are you on there?

A. Refer back to page 18, Exhibit No. 1. Buildings devoted to operations, $516,779.63 as shown by the company. Our report shows $460,716.07, showing the company's figures over ours by the amount of $56,063.56. Page 22 shows the different items that go to make up this difference of $56,000.00. The balance per the company's statement was $516,779.63. Balance as shown by the books, $513,311.48, the company's statement being $3,468.15 over. We have deducted the building which represents the value, the book value of the Euclid exchange proper of $46,685.51. The building at 10th and Pine streets as shown on the books is $653.85. That looks like a very insignificant amount for the building at 10th and Pine, but the company's officials stated at the time that property was purchased the ground value only was taken into consideration, and if I am not mistaken this $653.85 represents some work that has since been done upon the property by the company. The total buildings not devoted to operations, $47,339.36, and the land at 10th and Olive streets of $5,000 which I stated a few moments ago had been deducted from land accounts. I was mistaken in that; it is taken from building accounts, $5,000.00.

428 Questions by Judge Harris:

Q. We understand, Mr. McShane, our company is organized to carry on a telephone business, and has no lawful right to engage in any other business, and you exclude from this account lands you say are not used in the telephone business; in order to get at the reason, whether it is because you think they ought never to have been bought at all—it was not prudent, but a wild move—or whether simply because they are not now part of the operating, throbbing life giving telephone service that furnish a telephone investment in the business of serving the public?

A. I will give you my opinion on that: I think really that there are certain investments that the company has made for future operations, and, being made for future operations, they are made from the company's point of view, that by purchasing them at the present time it will not be necessary for them to pay an additional price, which possibly the land and building would demand in future years; but they do not add to the service; they are not utilized in rendering service, and for that reason I do not think that they belong to the plant investment for operation.

Q. But if the company did buy the land at the proper price now, and saved money on it, that would in the end be a saving to the public, would it not, when they put this into actual service?

A. Not necessarily, for the reason that at the time that the company would finally decide it was necessary to buy land and erect buildings on it they might see fit to buy more reasonable land in another part of the city, and it would not be the particular land that had advanced.

Q. Not necessarily because they might make a mistake and not buy the right thing at the right time, but assuming they did buy the right thing at the right time and saved money by doing it, just as any prudent, honest man would do in his own affairs or serving

the public, then why should it not be considered as a proper investment of the company in its effort to serve the public upon which they should have a return out of the public for the service?

A. For the same reason it is not utilized for the service of the public, and the company is utilizing in certain cases here those buildings and that land as an outside investment by leasing—for instance, 10th and Pine street- you have a hotel on that, I believe and pool room, and these buildings are being utilized for rent purposes.

Q. Now, the rents that you speak of, and the buildings that were on the lots when they bought them are showing up in the receipts of the company, are they not, on the books?

A. They are showing up in the books, yes sir; because they have the investment in the books.

Q. And if they bought the lots for the purpose of putting up a building that was necessary, they were providing for the future in the only way that they could provide for the future and they are in a proper way to give the best service, are they not?

A. My opinion of it is this: That a building can be bought
429 at any time; real estate can be bought at any time as the needs arise, and I do not think that a company should be permitted to capitalize on investments of that nature for the future.

Q. So, if the company could buy a lot for twenty-five thousand dollars and any prudent and sensible man would know by the time they got the plans and specifications and the finances ready to put up a building it would be worth one hundred thousand dollars, you think they should let the opportunity go by and at a later date when they get the plans ready pay seventy-five thousand dollars more and then ask the public to pay a return on that seventy-five thousand dollars?

A. That depends entirely upon the actual needs of the company.

Q. Yes, sir; I am assuming the needs of the company all the time.

A. If it becomes necessary for a company, particularly in this business, to have an exchange located at a particular point and they cannot operate by having that exchange located anywhere else, then it would be a prudent investment, but it is not absolutely necessary that an exchange be located on this corner or that corner, or that block or some other block; it is a matter of convenience, and a block or two farther is something that should not be taken into consideration.

Q. Yes, sir; that complicates it again, but to simplify the proposition, do you contend that the company should exercise the same good judgment and honest motive in taking advantage of opportunity in buying property that it is getting?

A. Well, from the matter of the stockholders, it is the proper thing for the company to look forward to their future investment, but from a matter of service rendered, it can only be based upon the property that is being utilized for that service.

430 Mr. PLAYER, the commission's engineer, testified for the commission as follows:

Saint Louis.

Land Owned by S. W. T. & T. Co. in St. Louis But Not Used and Useful in the Telephone Business.

	Size.		Per ft.	Amount.
C. B. 274, 917 Pine St.	25'-0"	x 109'-2"	$1,732.68	$43,317
C. B. 274, Tenth and Pine Sts.	51'-9½"	x 109'-2"	3,300.00	170,907
C. B. 429, Locust near Beaumont	50'-0"	x 134'-8"	250.00	12,500
C. B. 5260, St. Louis Ave. and Kingshighway Blvd.	65'-0"	x 127'-6"	60.00	3,900
	60'-0"	x 127'-6"	40.00	2,400
C. B. 274, Tenth and Olive Sts.	50'-0"	x 109'-2"	leasehold	**75,000
C. B. 2907, Colorado and	60'-2"	x 113'-6"	35.00	2,107
C. B. 274, 919-2 Pine St.	43'-6"	x 109'-2"	2,200.00	*35,887
C. B. 429, Locust and Beaumont	50'-0"	x 134'-8"	250.00	‡8,227
Total Land Non-Useful (see Note)				$354,245
Total Land Use- and Useful (see Note)				181,856
Total Land				$536,101

431 Saint Louis.

Bomont Exchange.

Building:

Cost of building		$44,610
Apportioned as follows:		
Local exchange	34.18%	$15,256
Southwestern toll	26.31%	11,733
A. T. & T. toll	39.51%	17,621
Total	100.00%	$46,610

Land:

Value of land		$12,500
Local exchange	34.18%	$4,272
Southwestern toll	26.31%	3,289
A. T. & T. toll	39.51%	4,939
Total	100.00%	$12,500

**Leasehold valued at $150,000. Fifty per cent or $75,000 assumed as not used or useful in telephone business.

*This land valued at $95,700. Thirty-seven and one-half per cent or $35,887.50 assumed as not used or useful in telephone business.

‡This land valued at $12,500. Sixty-five and eighty-two hundredths per cent or $8,227.50 assumed as not used or useful in St. Louis local telephone business.

NOTE.—For detail of used and useful land, see report.

Saint Louis.

Land.

The table in the report shows the value of all land used and useful in the telephone business. These values were arrived at by summarizing the information obtained from numerous real estate dealers and others having property for sale in the neighborhood of telephone properties, appraisal made by Messrs. Terry & Rutledge as of July 1st, 1912, and rentals.

The exchange building on land at Bomont and Locust streets is used for Southwestern local, Southwestern toll and American Tele-
graph and Telephone business. This building was pro-rated
432 on square foot basis by the following method:

All floor space used solely by one of the above branches of business was charged to that branch. All flour space used in common by more than one of the above branches was prorated on the basis of switchboard positions operated by the respective branches in this building. On this basis, the following percentages of the buildings were charged to the different companies.

Southwestern Local (St. Louis)	34.18%
Southwestern Toll	26.31%
American Telegraph & Telephone Co.	39.51%
Total	100.00%

The above percentages were also used in pro-rating the land.

In the case of land at Tenth and Olive streets, the leasehold was valued at $150,000. There is a six-story building on this piece of property. The first and second floors of this building are occupied by the Swope Shoe Company. The value of the property occupied by the Swope Shoe Company was assumed to be 50 per cent of the whole. This leaves 50 per cent of leasehold or $75,000 as used and useful in telephone business. This assumption was derived from rental values.

In the case of the land at No. 919-21 Pine street, the lot was valued at $95,700. There is a two-story building on this land of which the Telephone Company occupies one-half the first floor and
all the second floor. By assuming ratio of first and second-
433 floor rents for two-story building in this location to be 3 to 1, the amount 62½% or $59,812.50 was obtained as the value of land at No. 919-21 Pine street, which is used and useful in telephone business.

It is doubtful whether the Telephone Company would pay a fair rental for property on Pine street of this value for a supply room if it did not own the same. However, it has been included in this valuation as it was being used and useful in the telephone business at the time the inventory was taken.

Saint Louis.

Buildings Owned by S. W. T. & T. Co. in St. Louis But Not Used or Useful in Local Telephone Business.

Bomont Exchange, Beaumont and Locust Sts.	$29,354
Residence, Locust near Beaumont	15,245
Main-Olive Exchange, 10th and Olive Sts.	96,600
Supply Building, 919-21 Pine St.	2,584
Euclid Bldg., Kingshighway and St. Louis	49,256
Helm Hotel, Pine near 10th St.	18,266
Corner, 10th and Pine	2,146
Store Bldg., 204-6 N. 10th St.	2,380
Store Bldg., 208-10 N. 10th St.	2,068
Store Bldg., 917 Pine	6,723
	5,355*
Total Building- Non-Useful	$229,977
Total Buildings Used and Useful (See Note)	374,142
Total Buildings	$604,119

434 Saint Louis.

Buildings.

The exchange buildings, with the exception of Sidney and South exchanges, were all checked with the original plans. The original costs were obtained from the vouchers and these costs were raised to present-day costs of reproduction by applying percentage increases which were the weighted means of the increased percentages of costs of the various materials and kinds of labor in the respective buildings. Where additions or deductions were made to any of these buildings the same was taken into account.

In the case of the old South and Sidney exchanges and buildings at 919-21 Pine street and the pole yards, unit prices were applied to the several materials of construction which were used in said buildings.

For the remainder of the buildings at 10th and Pine, the Euclid Exchange building and residence on Locust street, the company's figures were used, as these buildings were not considered used and useful in the telephone business.

*New South building is in process of construction. The amount paid on contract up to 2/31/13 was $5,355.

NOTE.—For detail of used and useful buildings see Report.

435 Saint Louis.

Bomont Exchange.

Description of Property in Connection with the Part of the Plant Known as the Bomont Exchange Not Used or Useful in the Operation of the Saint Louis Local Telephone Business.

	S. W. T. & T. Co.	A. T. & T. Co.
Land	$3,289	$4,939
Building	11,733	17,621
Equipment S. W. T. & T. Co.	23,029	Not obtainable
Furniture & Fixtures	1,371	Not obtainable
Total	$39,422	$22,560
S. W. T. & T. Co.		39,422
Grand total		$61,982

Mr. Player found the reproduction cost new of the physical plant, as of December 31st, 1913, in St. Louis, to be $8,616,346.00; in Clayton, $81,448.00, and the reproduction cost new, less depreciation, in St. Louis, $7,395,739.00; in Clayton, $66,047.00, making a total reproduction cost new in Clayton and St. Louis, as of December 31st, 1913, $8,697,794.00, and a total of reproduction cost new, less depreciation, of $7,461,786.00. In these figures nothing is allowed for the cost of establishing the business, and nothing is allowed for working capital.

Mr. Player stated that the unit costs used by him were made up from the actual cost of the material to the company, to which "we applied what labor we knew to be necessary to erect those
436 units" and allowed a per cent for overhead in putting the units in place. He found that the company bought most of its material from the Western Electric Company approximately ten per cent lower than smaller companies pay for the same material. In obtaining the labor costs, he checked the records of the company, going through nearly 250,000 daily work reports.

Q. Are there any other parts of your report or any other theories that you used in making this valuation that you would like to explain to the Commission which you haven't been asked to?

A. I might say, for instance, that the central office equipment is quite an item, and all of that equipment was checked by us to show in detail, to show it was in place and operating. The figure in our report; that is on page 10; showing the cost of the central office equipment installed is $1,420,738.00, is approximately the same identical figure as is used by the telephone company in their report, with the exception that it doesn't include the toll board at Beaumont exchange. The engineer for the telephone company had made up in detail an inventory of each exchange, showing the equipment

of the central office, and I checked with him against the bills rendered by the Western Electric Company for equipment, the prices that he had used for the equipment, as shown in the report. The bills rendered by the Western Electric Company were absolutely verified because he had only used the prices of the material as were charged for.

In this appraisal nothing has been allowed for working capital or cost of establishing the business. Nothing has been gone into in this ap-raisal except the cost of the physical property, conduits, poles, cables, switchboards, etc.

The receivers, transmitters and induction coils are not owned by the company. This property is owned by the American Telephone & Telegraph Company and is rented to the Southwestern Company, the 4½ per cent payment to the American Company covering this rental, together with other services. Therefore, the receivers, transmitters and induction coils are not included in the appraisal. Mr. Player figures that the value of a receiver, transmitter and induction coil is $3.055, and if the Southwestern Company owned these instruments there would have to be added to his appraisal for St. Louis and Clayton approximately $207,000.00, which he figures is the approximate value of these instruments in those exchanges. Of this amount about 98 per cent would apply to the St. Louis exchange alone.

437 S. R. MORROW, being duly sworn, testified on behalf of the Public Service Commission as follows:

Mr. Morrow is one of the assistant engineers of the Public Service Commission. He holds a civil engineering degree from the University of Missouri, from which he graduated in 1909. For about one-half year after he graduated he was in general engineering practice in Southwest Missouri, after which time he was in concrete lock and dam and building construction work for the United States government until October 3, 1913, at which time he came with the Commission. His work with the Commission has been looking after the concrete and building phase of the work of the engineering department. He made the detailed inventory of the lands and buildings, furniture and fixtures of the Southwestern Telegraph & Telephone Company shown in Mr. Player's inventory introduced as Commission's Exhibit "B."

Q. Now there is some question as to the land and lots; go direct to that point and tell the commission what difference there was in the appraisal presented by the engineers for the commission and those for the company, and wherein, if you do differ, and the reason for excluding lands if you do so? And refer in your testimony to the page of the engineer's inventory and appraisal, if you refer to that, when you testify?

A. On page 8 of the appraisal we have the inventory of the land; the main differences between the commission's appraisal and the telephone company's appraisal are, first, with the Beaumont exchange at Beaumont and Locust; the first item we have there, an item of

$4,272, included as used and useful to the local telephone business; at the bottom of the page you will note that the land was valued at $12,500, for fifty feet would be at the rate of $250 a foot, which I believe the company turned in; that was prorated because of the fact that the A. T. & T. and the Southwestern local and the Southwestern toll all occupied that building; the space used exclusively by these departments was charged up to them on the square foot basis; the space used in common was prorated on a switchboard position basis; these were added, a per cent of 34.18 was found to be
438 charged to the St. Louis local; I can give you the details of that if you want it.

Mr. Chairman:

Q. I think that is sufficient; in other words, you found that 34.18 per cent of this entire building was used for the convenience of serving the public in the St. Louis exchange?

A. That is it.

Q. And the balance of it was for the other purposes which you have enumerated?

A. There is also a difference there of three feet; the St. Louis—or the company appraisal allowed but 47 feet of that land there as charged into—that is, they had taken two lots, 47 and 53 feet, but upon measuring it up I found that 50 feet were being used by this telephone exchange; the other 50 feet, which is not included in used and useful property here, is now being used for an old lady's home, I believe, and is included in the list of non-used property.

A. Now the property at 919 Pine—or the next item is at Tenth and Olive, leasehold there; they have valued the leasehold at $200,000; I believe, and they charge that all to the local telephone business; we valued the whole leasehold at $150,000 and prorate that at fifty chargeable to local telephone business because of the fact that the Swope Shoe Company occupied the first two floors of that building; however, on that basis the revenue from the Swope Shoe Company should be extracted from the total revenues on that basis as shown.

A. Next is the piece of land at 919-21 Pine; in that they have a whole corner there at 10th and Pine; the company, I believe, included all that land in their appraisal, while we have included only 62½ per cent of the property at this place, 919-21 Pine, be-
439 cause of the fact they were using that as a store room; they were using the first floor of 919 and the second floor of 921—919 and 921; therefore on a rental value basis we found that 62½ per cent of the total value should be allowed as used and useful property; I might say also in that connection that it is doubtful whether the company would rent a building that would be as expensive as this; that is, if they paid reasonable income on it for a store room, but in view of the fact that they had previously held the training school there that they are now holding at Euclid exchange we considered that it was right to allow this, because they could move the training school back there, and that would leave the Euclid exchange out altogether.

A. The Company bought the corner at 10th and Pine streets and at 917 Pine street with the idea of building the exchange main office building there.

A. Euclid exchange on page 49 is the last of the property which is owned by the Southwestern T. & T. Company, but not in use; in that list we find the property is at St. Louis and Kingshighway, which has the Euclid exchange building on it; they have included this land in their appraisal.

Q. Explain to the commission why you did not include the Euclid exchange in your value as being used and useful for the public?

A. Well, I understand that sometime this spring that they used it for a training school, but they were just using it merely because they had a building, and had had this training school at the property at 919-21 Pine, so that it was really not necessary to use this building at all, and as a telephone exchange, from all that I could
440 obtain from both our engineers and the Bell engineers it would probably never be used as an exchange, hence there seems to be no probability of it being used in the telephone business, and it was not included.

A. At Colorado and Wilmington is a piece of property upon which they are now constructing the New South exchange; that would come under property under construction, I suppose, and while it is not used and useful, it is property that is being used for construction purposes at the present time.

Q. Building an exchange on it at this time?

A. Yes, sir; they are building an exchange; it is to take the place of one of the exchanges included, hence it was not included as used and useful property until it is put in service.

This is all the property that the Commission's engineers and the engineers for the telephone company disagree on. There are no appreciable differences between the engineers as to the value of the various parcels of land except the leasehold at 10th and Olive streets, which the company values at $200,000.00, and the Commission engineers value at $150,000.00.

He does not want to be understood as advising the Commission that the purchase of the Pine street property was an improvident purchase and ought not to have been made by the company, and the same is true as to the other pieces of real estate. Both the valuations submitted by the company and the valuations of the Commission's engineers are based upon the advice of reputable real estate men, and there is approximately 7 per cent difference between them, of which more than 4 per cent is the $50,000 difference
441 on the leasehold at 10th and Olive streets. He does not consider this an unusual or unnatural variation in opinion between the experts on real estate values; in fact, it is a very small variation.

Judge Harris:

Q. Now, if you are sufficiently versed in the telephone business, while we are on this question of the used and useful, or unreasonable value of property—where do you think the proceeds of a piece

of this real estate would go in case the telephone company should sell it? You say they have a piece of property on Pine street that is not used and useful in the telephone business? We will suppose they gave fifty thousand dollars for it and sold it for one hundred; what becomes of the one hundred thousand dollars in your judgment in the telephone business?

A. It should be returned to the stockholders; they are to receive a return—on my theory they are to receive a return on it if it does remain in the capital stock; therefore, it is a separate venture and should be returned to them in case it is sold.

Q. Suppose they would sell in an independent venture of the company out in the country one hundred telephone poles they paid $1.50 for and sold them for two dollars, where would the money go?

A. I imagine it would go back to the treasurer of the company because of the fact that the treasury of the company paid for the poles originally, and it was evidently purchased for their own use; I take it that the Bell Telephone Company is not in the pole business.

Q. Do you not take it that the telephone company could not be in any business at all except the telephone business?

A. That is my idea.

Q. That is all the business they can be in?

A. Yes, sir.

442 Q. If they sold a thousand telephones to somebody, their receipts would go into their treasury as receipts from a thousand telephones?

A. In that case.

Q. If they sold one hundred poles, the receipts would go into the treasury the same?

A. Yes, sir.

Q. If they sold Pine street property for one hundred thousand dollars, the receipts would go into the treasury the same?

A. No, sir; I do not think it is a parallel case; I think it is a separate venture that they are—in the rate making case that property is not used and useful, and on my theory they should not be allowed a return on it; hence any return that comes from that should not be computed on a——

Q. That is a different branch of the subject; you are not pretending to say they should not have bought the Pine street property, so in the absence of that I am assuming they bought it prudently and probably for the best economizing in the total investment of their plant values?

A. Yes, sir.

Q. Assuming they bought it prudently and are going to put a building on it, and bought it at the right time and right price, it is part of the telephone business?

A. No, sir.

Q. Is it not part of the telephone business to buy a lot when they need it and put up a house on it when they need it?

A. It is left to their judgment whether they should or not; I do

not believe that is part of the telephone business to the extent that it should be included in rate making.

Q. Do you not think it is proper for a telephone company to buy a lot and put up a suitable building for an exchange building, suitable, fireproof, and in such a way as to economize in cost
443 and get the greatest protection to the public and the service given for the property?

A. Yes, sir.

Q. One of the steps would be buying a lot at the proper time?

A. Not as far as the public is concerned.

Q. And building a house on it at the proper time would be the next step? I am talking about getting it into the returns of the telephone business.

A. Yes, sir.

Q. Then the next thing would be to put in the boards and set up the frames and put in the conduits and connect it up all in order?

A. Yes, sir.

Q. When from the time they commenced this building proposed would this be part of the telephone business; when would it become part of the telephone business?

A. When the business was transferred from the old exchange to the new exchange.

Q. When it was finally connected up?

A. Yes, sir; in making a valuation at that time you would allow interest during construction, and interest on their land while the construction is going on; in this case there should be no interest on it while it is being constructed.

Q. Now, as a matter of investment of the property, in the course of construction, this investment would begin with the purchase of the lot, would it not?

A. Investment would.

Q. And would grow as they added to it until it was finally—life breathed into it, and it started to ticking off its service to the public then it would cease to be property in course of construction and be property used or useful in giving service, according to your theory?

A. Yes, sir.

Q. You think at no time before that property was connected up and became a useable thing as part of the essential element
444 of a telephone service, and the company should sell it and not carry it on into the final objective that the proceeds constitute a separate line of business that the stockholders meet and cut up, that the public has no interest in?

A. It is a separate venture that the public has no interest in; what would become of the proceeds, that is different.

Q. Now, then, on that theory it would be necessary for the public, when this all became part of the telephone, for the public to pay a price for all time to come that would protect that investment and interest on it during the time you were getting it into construction and working order, and if the amount paid, say—starting with one hundred thousand dollars an- this accumulating expense amounted to twenty-five thousand dollars when you got through, that for all

future the public would be paying a return on $125,000, because you did not call this telephone business until it had accumulated this $25,000 of expenses; that would be the situation?

A. No, sir; my idea is they would pay an income on the property—the present value of the property at the time it is put in service.

Q. For replacement appraisement purposes, then, you do not follow the line of the investment and the growth of the investment, but you take the property as you see it today and appraise it and get at its value?

A. Yes, sir.

Q. On that theory, then, in purchasing of property before it goes into the necessary and inseparable use of giving service is a side pal of the directors; they may buy and sell and speculate in that line of property as a side share from the telephone business?

A. In this particular case that is the case.

445 Q. That is involved in the replacement theory as applied?

A. Yes, sir.

P. L. BALDWIN, being duly sworn, testified on behalf of the Commission as follows:

Mr. Baldwin is one of the engineers of the Public Service Commission and has been such since November, 1913. He has had approximately five years' experience in valuation work with Messrs. Burns & McDonald, Consulting Engineers in Kansas City. He is a graduate Electrical Engineer from Missouri University Class of 1906. He was employed by this firm immediately after he left college, where he was employed as draftsman on construction work, designs and letting contracts.

Mr. Baldwin assisted Mr. Player and Mr. Morrow in preparing Commission Exhibit "B." He worked out the unit costs and the prices of the underground construction, except the cable, which Mr. Player valued.

A. The unit costs are made up very much the same as the others in that we took the material costs and checked the quantities of the company and found those to be correct, and then we used those quantities and applied the prices the materials were actually costing the company, and then applied the proper labor charges with the ten per cent profit as in the other unit costs.

In figuring the cost of the conduits he did not figure the cost of building the conduits under the present condition of the streets, but figured his cost on the condition of the streets at the time the conduits were actually built. That is, if at the time of his appraisal the streets were paved and at the time the conduit was

446 actually built the same streets were macadam, he figured the cost of building the conduit on the basis of cutting the macadam, instead of cutting the paving, whereas, the company figured on the basis of cutting the paving, the condition of the streets actually existing at the time of the appraisal. Therefore, in regard to this item, the company followed the theory of reproduction cost new, but he did not. This accounts for the difference between his

appraisal of the underground construction and the company's appraisal. Mr. Baldwin testified that following strictly the theory of reproduction cost new of the property as it existed on December 31st, 1913, based upon unit prices as of that date, the company's engineers' appraisal was pretty nearly correct.

F. O. HALE, being duly sworn, testified on behalf of the company as follows:

Mr. Harris:

Q. Now, I want you briefly and concisely to explain to the Commission the circumstances attending the purchase and the plan of the company in purchasing land for buildings in connection with the development of the company's telephone business, and you may handle the different pieces of real estate specifically, beginning with Olive street; explain how it is rented, part of it, and why it is there, etc.

A. The building at Tenth and Olive is a building on leasehold which we have there, was built some years ago for the purpose of the telephone company and has been used entirely for telephone purposes; as the business has grown, it has become inadequate; there is not sufficient room; we are using all but two floors of it
447 for equipment purposes and the other two floors would not house our employes, so that it has become necessary to rent space outside; now, we had this choice: We could use these two floors for offices and rent such aditional space outside as was necessary, or we could rent all this space outside and lease these two floors to some other concern; now, we found that it figured out about like this: We could rent to some other concern, or we could lease to some other concern those two floors at a rental in the neighborhood of a dollar and a half a square foot; we could get the space that we required for somewhere around 75 cents; these are approximate figures; I have not figured them out exactly, but they represent the conditions; now, it was obviously the proper thing, from a point of view of economic management of the business, to do just what we have done; it is absolutely necessary that we have a building to house exchange equipment which furnish the service in the Main and Olive exchange and to have the building there it is necessary to own this leasehold; it is necessary to have this building which we have got, and we feel that without any quetsion all that property is used and useful for telephone purposes as long as it is necessary to have it there.

Mr. Chairman:

Q. You mean the Olive street property now?
A. I am talking about the Olive street property.

Mr. Harris:

Q. You had to rent some more space, and you could rent all the space for this office for less money than what you could get for a portion of that building; less expensive?

A. We could rent it at a very much less rate per square foot, about half and it served our purpose just as well.

448 Q. Take up the Pine street property; what was that bought for?

A. I would like to say one thing additional in regard to the Tenth and Olive property; if we had occupied these two floors with our office and employes, there would have been no question about its being used for telephone purposes, and I assume it would have been used for telephone purposes in the sense that term has been used by the Commission engineers; the fact that we have been able to operate the entire property more economically by handling it as we have has been the basis, if I understand it correctly, of exclusion of these two floors in not being used and useful.

Q. Saving the difference in these rents caused, in the opinion of some of the experts, the paying out of your capital investment there seventy-five thousand dollars that would have been in if you had only used these expensive floors at a great expense to the company?

A. $75,000 in the leasehold and the operation of the building.

Mr. Harris:

Q. I think the Commission understands that. That Pine street property; why was that bought and the necessity for it, and what was it bought for?

A. In placing equipment an exchange the size of Maine district, St. Louis, it becomes a very important feature to have that exchange at what we call the wire center; that means, having laid out your exchange boundaries, the boundaries of the—the physical boundaries of the area which you are going to operate from this exchange, the wire center is the point at which you can bring all these wires together and use the least amount of copper, for least investment in wire and copper; that in a large exchange becomes a very

449 important matter; I might illustrate it by saying that these are approximate figures; that in the case of the Main and Olive units, to take the wires that we have centered there and will have to center there in the future a block away, approximately 300 feet, will cost from $50,000 to $100,000, depending on the growth, just for the cost of taking those wires and constructing conduits and taking those wires that distance away from where they are centered, so that it becomes necessary, in determining where you are going to build that exchange, that you balance up the cost of the property of your real estate which you will have to pay for your land (the building will cost the same whether some one corner or another because that is determined by the requirements of the business), but you balance the cost of taking your outside plant and carrying your wires against the cost of your real estate; now, the Main exchange was located about 1888 to 1890 on the present prop-

erty at Tenth and Olive, since that is approximately the wire center as near as you could get to it practically for the Main and Olive districts; now, with the growth of the business we have centered an enormous plant at that point; the building which we have there is nearly full of equipment; it is not good practice to put switchboards on the lower floor of a building where the street cars, because of the noise operators cannot operate satisfactory; it interferes with your service; the upper floors are nearly full of equipment; Main and Olive exchanges are growing, as was foreseen a long time ago, and the burden is on us to take care of the business; the plant is all centered so that it became necessary for us to make provision
450 for relief, what we call relief, to take care of additional growth; it was realized that if we did not buy that property when we could, it was liable to become improved; possibly we could not buy it at all tomorrow.

A. And it is necessary as a general proposition in a downtown section to buy this land when you can; if you do not buy that when you can, either it is going to become improved and you cannot buy it at all, the party owning it will not sell it, or if you can buy it you have to pay the cost of the building which has been placed on it and the cost of demolishing that building because that building would not be satisfactory; the ordinary office building is not satisfactory for telephone purposes; it cannot be used; so that it becomes a question of balancing the probable cost of your pr-perty if you wait the cost of carrying it; the whole problem from a telephone standpoint is to use good, ordinary business judgment and buy it at economical times; for that reason the property at 10th and Pine was purchased because it is necessary in carrying on the business; I believe that it is used and useful in the business.

The property at 10th and Pine streets has only the improvements on it which were on it when the company bought it. The company is getting as much rent out of it as it can until the new exchange is built upon it. The reason the new exchange has not been built upon this property is because of the financial condition of the company and the general financial condition. As soon as this condition improves the exchange will be built. The property is also being used for telephone purposes as a store room. Both the Pine
451 street property and the Olive street property are needed for telephone purposes.

Q. You would still continue to use the Olive street building and your leasehold the remaining number of years and the Pine street property also at the same time?

A. I could not say we would necessarily continue to use the Olive street property in the leasehold all the remaining life of the lease for this reason: If you might prove that the proper thing to do when you build on 10th and Pine would be to transfer the equipment which we—that is, put in new equipment, replacing that which we now have at 10th and Olive, put it all into the new building; our conditions have not gone far enough to determine that absolutely; we do know this, that we have to have additional equipment and we have to have it on this 10th and Pine property.

The parcel of real estate and residence at 2654 Locust street, adjoining the Beaumont exchange, was excluded by the Commission's engineers. This is the property described by the Commission's engineers as being occupied by an Old Ladies' Home.

Q. Tell us how that is used or useful for the convenience of the public in the operating of your telephone plant there.

A. Because as our Beaumont exchange grows it is going to be necessary to extend the building; to extend that building we must have this lot to extend it over; it was bought for that reason; it is very probable within the next year or two we will begin—we will have to either extend that building or use this property that they are now leasing (using) as an old ladies' home, for operators' retiring quarters; we have not made our plans definitely, but we have to
452 make some use—we have to extend that property; in the meantime we are getting such revenue as we can out of the residence by leasing it.

Mr. Harris:

Q. To put it brief, you have room enough there for immediate purposes; you know at some time in the future you will need more, and you buy it while you can get it right and when you can get it?

A. To know we can get it.

Q. While you are holding it as your business grows to it, you get all you can out there and put it in the treasury of the company?

A. Yes, sir.

Q. If you did not get that lot and hold it and you outgrew the space you had, you would have to lease your building that is suitable for nothing else, get a lot somewhere else and move your conduit and whole construction to an office big enough?

A. Yes, sir.

Q. Is the company buying or speculating in real estate outside of carrying on its telephone business?

A. No, sir.

Q. Briefly refer to the others as to why you got them, and cut it as short as you can?

A. The lot for the New South building was excluded; that lot was bought and we are now constructing a new exchange on it to take care of the growth in the South exchange because we cannot take care of a case where we did not have proper arrangements for an extension; it; the only thing to do is to start a new building; that is illustrative of a case where we did not have proper arrangments for an extension; we are forcing the construction of this new exchange that is under way.

All of the property excluded by the Commission's engineers was bought in furtherance of the general plan to develop the business, as explained by the witness. The facts in regard to the building
453 of the Euclid exchange, which was excluded by the Commission's engineers, are as follows:

"At the time the Euclid exchange was built the city was growing very rapidly to the west, and from the real estate developments as they stood at that time it seemed that an exchange where the Euclid

building was located was a necessity; the company went ahead and constructed the building; before they got it actually put into service development had shifted to the south to what is known as the present Cabanne section and Park View, and it was realized that an exchange was necessary in the Cabanne district; it would not be necessary if the Cabanne, if the exchange in the Cabanne district was built to put this Euclid exchange into service; they immediately stopped the work on Euclid and went ahead with the Cabanne exchange; that is the reason that the Euclid property is standing as it is today.

Q. Mr. Hale, why did you buy this lot and build this exchange in advance on your supposition that the development is going to be in a certain part of town or a certain other part?

A. We have no other recourse; the burden is on us to provide telephone service and provide adequate service when it is required, and we have to do this; we have to anticipate.

Q. If you did not take that course you would wait until the demand had accumulated large enough to know right where that investment would be and let the people wait and go on and put in the investment?

A. Yes, sir.

Q. Then you would hit it every pop; you would know every time you were putting it in the right place?

A. Yes, sir.

Q. But to be ready to serve them when they ask for it you have to guess or speculate in advance?

A. Yes, sir.

Q. This is one case where the speculations, the sudden change in the development turned out it would not be an economy and changed them to put in another exchange in the new section?

A. Yes, sir.

454 (*d*) On the subject of the "going concern value" of the Southwestern Company's property in the State as a whole as of June 30, 1919, the Southwestern Company's witnesses testified that the "going concern value" amounted to $5,594,816.00 on that date.

As an illustration as to how the "going concern value" of the Southwestern Company's property was determined, the Southwestern Company's engineer testified in regard to the Springfield exchange as follows:

455 Q. Well, you have allowed here a very large sum, Mr. Kositzky, as your estimate of what it would cost to establish the business that you have got here in this town, if it was all wiped out and you had to begin over again, or if you went into another town identical in size with this, a large sum, $173,000. Now, just go over the matter in your own way and tell the Commission why it is your conviction that it would cost that and how you arrived at that sum.

A. The item which I show on sheet 1 of my appraisement is 20 per cent of the reproduction cost. I might explain that this 20 per cent seems to be an average used by engineers and seems to be an average of what has been allowed by various courts and commis-

sions, and I have used that percentage. I have also attempted to compute the various elements that make up the cost of establishing the business and I might say that the sum of my computations was nearly 26 per cent.

Mr. Kositzky prepared an exhibit showing how he arrived at the 26 per cent, which was introduced in evidence as Exhibit 20, and is as follows:

456 EXHIBIT 20.

Cost of Establishing Business.

Springfield, Missouri.

Summary.

	Total cost.	Per cent of total plant.
1. Preliminary Expert Advice	$1,000.00	.12
2. *Legal Expense	12,125.00	1.40
3. Cost of Selling Service	32,827.00	3.79
4. Training Forces	8,281.00	.96
5. First Issue of Directory, Instructions, Routines and Records	2,050.00	.24
6. Operating Deficits	168,137.00	19.41
Total Cost of Establishing Business	$224,420.00	25.92

1 Preliminary expert advice:

The first step in starting an enterprise is for the promoter of the enterprise to secure the services of a competent expert to furnish the following information:

a—Amount of capital necessary;
b—Approximate number of subscribers to telephones which can be obtained;
c—The rates to be charged in order to pay expenses and a fair return on the investment;
d—The approximate revenue and operating cost of the plant;
e—And many other items.

The cost of obtaining this expert, together with his traveling expenses, railroad fare, hotel expenses, stenographic work, stationery, etc. $1,000
Percent of Total Plant ..... .12

457 2. Legal expenses:

Statement of estimated legal expense in organization of a telephone corporation with $500,000.00 actual capital and $1,000,

*Not including Financing, Brokerage Fees, Discounts, Printing, Stock and Bonds, etc.

000.00 authorized capital and $500,000.00 of Bonds, under the laws of Missouri, and the procuring of franchise in the City of Springfield, Missouri, for the operation of a telephone plant in said city, including all of the usual legal expenses necessary to equip such corporation for the transaction of business:

Procuring Charter and Attorney's Organization Fees.

For Capitalization, Charter Fee, Filing and Recording Charter	$1,025
For Attorney's Organization and Promotion Fees	10,000

Corporation Records.

For Secretary's Book and other Corporation Records	100

Expense of Procuring Franchise from City.

For Attorney's Fees and Expense in connection with Special Election on Franchise Ordinance	1,000
Total Legal Expenses	$12,125
Percent of Total Plant	1.40

458 3. Cost of selling service.

(*a*) Subscriber stations:

From actual records of the cost of advertising and canvassing for five years in the Southwestern Bell Telephone Company for approximately 100 exchanges, it was found that the cost per gross stations connected for this period was $3.15.

The Springfield records show that during the past three years the percent of cancellations of contracts or disconnections based on the number of stations in service at the end of the year is 17.5% per annum.

It is estimated that the contracts for service will be secured during a four-year period. By applying this percentage to the stations in service at the end of each year the total number of disconnections is obtained.

Year.	Net stas. in service (end of year).	Avg. per cent cancellations (17.5%).
1st	3549	621
2nd		
3rd	5949	1041
4th	7049	1234
Total disconnections		2896

Net stations in service end of fourth year	7049
Disconnections for four years	2896
Gross stations connected during the four years	9945

Cost of selling exchange service:

9945 gross stations @ $3.15	$31,327
Percent of total plant	3.62%

459 Brought forward $31,327

(*b*) Connecting company contracts:

There are in the Southwestern Bell Telephone Company approximately 524 companies with which we have connecting company contracts for an interchange of service; of this number approximately 241 are in Missouri. There is considerable time and expense connected with establishing these connecting company relations. In the vicinity of Springfield, we have twenty-seven such companies, as follows:

Aldrich Telephone Company	Aldrich, Mo.
Ashgrove Telephone Exchange	Ash Grove, Mo.
Ava Telephone Company	Ava, Mo.
Billings Telephone Company	Billings, Mo.
Polk County Telephone Company	Bollivar, Mo.
Farmers Mutual Telephone Company	Bois D'Arc, Mo.
Brookline Telephone Association	Brookline Sta., Mo.
Chadwick Telephone Co.	Chadwick, Mo.
Clever Co-Opr. Mutual Tel. Co.	Clever, Mo.
Dadeville Mutual Tel. Co.	Dadeville, Mo.
Elwood Telephone Co.	Elwood, Mo.
Everton Telephone Co.	Everton, Mo.
Farmers Mutual Telephone Company	Fairplay, Mo.
Fordland Telephone Co.	Fordland, Mo.
Glidewell Telephone Exchange	Glidewell, Mo.
Mutual Telephone Company	Greenfield, Mo.
Jones Line Telephone Company	Jones Line, Mo.
Mansfield Telephone Company	Mansfield, Mo.
Farmers and Merchants Telephone Co.	Rogersville, Mo.
Seymour Telephone Company	Seymour, Mo.
Greenfield Telephone Company	So. Greenfield.
Stoutland Farmers Tel. Co.	Stoutland, Mo.
Strafford Telephone Company	Strafford, Mo.
Walnut Grove Tel. Co.	Walnut Grove, Mo.
LaClede Telephone Company	Lebanon, Mo.
Independent Telephone Exchange	Conway, Mo.
Webster Co. Telephone Company	Marshfield, Mo.

A Conservative estimate of the cost in labor, traveling, hotel expenses, etc., for this item would be	$1,500
Total cost of selling service	32,827
Percent of total plant	3.79%

460 4. Training Forces:

Before service can be furnished it will be necessary to have trained and experienced employees. These employees must each be trained for their particular line of work and it is the cost of training these employees that is shown below. A study was made as to what it would cost to train an operator in an exchange the size of Springfield. There are now 106 employees in the Traffic Department in Springfield, and it is estimated that it would cost $43.59 per operator to train these employees.

$$106 \times \$43.59 = \$4,621$$

There are seven commercial employees at Springfield who must be trained in their general and special lines of work, and a conservative estimate as to the cost of training these employees is as follows:

1 Manager	@	$250	$250	
3 Employees	@	50	150	
3 Employees	@	25	75	
				$475

In the Plant Department there are 43 employees at Springfield. These employees must be trained for their special line of work. In the training of a foreman a man is selected and started as groundman; he is then promoted after a time to a third-class lineman, and at about the end of the first year to a second-class lineman; at the end of the second year to a first-class lineman, and at the end of the third year to a foreman. A chief tester is developed by starting as an installer and working up to troubleman; then to an inside or switchboard man; and then to chief tester. In order to train these employees along their particular lines it costs about as follows:

1 Foreman	@	$200	$200	
1 Cable Splicer	@	175	175	
1 Chief Tester	@	150	150	
1 Swbd. and P. B. X. man	@	125	125	
1 Inspector	@	110	110	
2 Troublemen	@	100	200	
11 Linemen	@	100	1,100	
5 Installers	@	75	375	
10 Groundmen	@	50	500	
10 Employees	@	25	250	
				$3,185

Total cost of training forces	$8,281
Per cent of Total Plant	.96%

461 5. First issue of directory, instructions, routines and records:

At the time the plant is cut into service it will be necessary to furnish an initial directory, the cost of which from past experience of the preparation, compilation, proofreading, printing, incidental expenses and delivery will be.....	$900
In order to conduct an operating company it is necessary to have instructions and routines to govern the conduct of the business, and a conservative estimate as to the cost of preparing, editing, printing and issuing would be.....	200
A business of this size could not be conducted without a complete set of records. These records include Accounting, Commercial, Plant and Traffic records; estimated cost..	950
Total Cost Directory, Instructions, etc.....	$2,050
Per cent of Total Plant.....	.24%

6. Operating deficits:

This item of Operating Deficits covers the direct operating loss which occurs in the development of a telephone exchange system.

Total Operating Deficits.....	$168,137.00
Per cent of Total Plant.....	19.41

462 Station Development.

The accompanying statement showing Station Development indicates the estimated growth of the Springfield plant by quarters. The following is an explanation of how this program was developed:

First two years (preliminary and construction period):

It will require the first two and one-half years to organize and promote the Company and build the plant. During the first six months engineering and fundamental plans will be made and other preliminary work carried forward. During the next two years actual construction work will occur. The plant will be ready to be cut into service the last day of the second year. During the building period of two years, an active canvass will be made to secure as many stations as possible to be connected as soon as the plant is ready for service. It is not reasonable to expect that a plant would be cut into service with its full number of subscribers, which it has taken years to add, but there is a saturation point, or a point that will be reached after which it is logical to expect only a gradual or normal growth. From our experience and studies an exchange the size of Springfield could possibly be developed up to the saturation point by rigid canvassing, in two years after plant is cut into service. It has been assumed, and studies have substantiated this fact, that it is reasonable to expect that about one-half of the total stations would be connected when the plant is cut into service on the last day of the second year.

Third year (first year of operation):

During this period it is estimated that the stations could be increased about 70% for the year. This growth has been indicated by quarters on the accompanying sheet. It will be observed that the number of stations added is diminishing each quarter.

Fourth year (second year of operation):

During this period it is estimated that the remaining 30% of the total saturation could be obtained, and at the end of the fourth year the present number of stations would be in service.

This list shows only the net stations added and does not include the disconnections. A much larger number of stations would be added in order to gain this net growth. The stations as shown are the net number of stations at the end of each quarter.

463

Station Development.

A study has been made to determine the net growth in stations per quarter year and the length of time required to develop a plant up to the time it would reach a normal growth.

	Station growth per quarter.		Stations in service.	
	Total.	Average.	At end of quarter.	Avg. for quarter.
First six months:				
Preliminary Period	.....	.....	.....	.....
First year:				
First Quarter (Construction Period)	.....	.....	.....	.....
Second Quarter.....	.....	.....	.....	.....
Third "	.....	.....	.....	.....
Fourth "	.....	.....	.....	.....
Second year:				
First Quarter (Construction Period)	.....	.....	.....	.....
Second Quarter.....	.....	.....	.....	.....
Third "	.....	.....	.....	.....
Fourth "	3,549	.....	3,549	.....
Third year:				
First Quarter.....	720	360	4,269	3,909
Second "	640	320	4,909	4,589
Third "	560	280	5,469	5,189
Fourth "	480	240	5,949	5,709

	Station growth per quarter.		Stations in service.	
	Total.	Average.	At end of quarter.	Avg. for quarter.
Fourth year:				
First Quarter.....	400	200	6,349	6,149
Second "	320	160	6,669	6,509
Third "	240	120	6,909	6,789
Fourth "	140	70	7,049	6,979

464 Method of Figuring Plant Additions.

Basic Figures.

First two-and-half years:-

Plans are being made and plant is being constructed.		
Plant Cost of Property at time completed.....		$866,440
Plus:		
Office Furniture and Fixtures.....	$2,380	
Proportion of General Investment.....	4,157	
		6,537
Total		$872,977
Less Cost of:		
"A"—Subscribers' Station Apparatus, Installations, P. B. X. Equipment, Block Wires, Booths and Special Fittings.....	76,383	
"B"—Subscribers' Drops.....	21,186	
		97,569
		$775,408
Total Stations, Sept. 30, 1916.....		7,049

$97,569 ÷ 7049 = $13.84 per Station.

465 Increase in Plant Value on Account of Stations Added:

	Station growth per quarter.	Value @ $13.84 per station.
Stations connected at time plant is cut in service.	3,549	$49,129
First year of operation:		
First Quarter	720	9,966
Second "	640	8,858
Third "	560	7,750
Fourth "	480	6,642
Second year of operation:		
First Quarter	400	5,536
Second "	320	4,428
Third "	240	3,322
Fourth "	140	1,938
		$97,569

Amount of working capital as furnished by Auditor..... $26,818
Total physical plant..... 872,977

$26,818 \div 872,977 = 3.072\%$.

	1. Plant cost at beginning of quarter.	2. Plant additions (cost per quarter).	3. Total plant cost, incl. addns. (1 & 2).	4. Plant additions preceding quarter.	5. Avg. plant additions, ½ of 2.	6. Column 4 plus col. 5.	7. Working capital, 3.072 % of col. 6.	8. Total plant, incl. working capital (3 & 7).
First Year:								
First Qrtr.	.....	.....	.....	.....	.....	.....	.....	.....
Second "	.....	.....	.....	.....	.....	.....	.....	.....
Third "	.....	.....	.....	.....	.....	.....	.....	.....
Fourth "	.....	.....	.....	.....	.....	.....	.....	.....
Second Year:								
First Qrtr.	.....	.....	.....	.....	.....	.....	.....	.....
Second "	.....	.....	.....	.....	.....	.....	.....	.....
Third "	.....	.....	.....	.....	.....	.....	.....	.....
Fourth "	$775,408	$49,129	$824,537	.....	.....	.....	$25,330	$849,867
Third Year:								
First Qrtr.	$49,867	$9,966	$59,833	.....	$4,983	$4,983	153	$59,986
Second "	$59,986	8,858	$68,844	$4,983	4,429	9,412	289	$69,133
Third "	$69,133	7,750	876,883	4,429	3,875	8,304	255	$77,138
Fourth "	$77,138	6,642	$83,780	3,875	3,321	7,196	221	$84,001
Fourth Year:								
First Qrtr.	$84,001	5,536	$89,537	3,321	2,768	6,089	187	$89,724
Second "	$89,724	4,428	$94,152	2,768	2,214	4,982	153	$94,305
Third "	$94,305	3,322	$97,627	2,214	1,661	3,875	119	$97,746
Fourth "	$97,746	1,938	$99,684	1,661	1,938	3,359	111	$99,795
		$97,569					$26,818	

Operating Deficits.

1. Period of development.	2. Cost of plant at beginning of quarter, including working capital.	3. 8% int. on cost of plant.	4. Additions to plant including working capital.	5. 8% int. on plant additions.	6. Operating expenses.	7. Reserve for replacements.	8. Total of preceding.	9. Telephone operat-revenue.	10. Cost of plant at end of quarter.	11. Total operating deficits. 3x5x6x7=9.
First Six Months—Engineering and Fundamental Plans.										
First Year—Construction Period.										
Second Year—Construction Period.										
Fourth Quarter....	[2]$755,408	.....	74,459	....	.....	.....	$49,867	.....	.....	.....
Third Year—First Year of Operation:										
First Quarter.....	$49,867	$16,997	10,119	$101	$18,307	$12,459	907,850	$22,438	$885,412	$25,426
Second "	885,412	17,707	9,147	91	18,767	12,601	943,725	26,341	917,384	22,825
Third "	917,384	18,345	8,005	80	19,171	12,725	975,710	29,785	945,925	20,536
Fourth "	945,925	18,914	6,863	69	24,283	12,834	1,008,888	32,770	976,118	23,330
Fourth Year—Second Year of Operation:										
First Quarter.....	$976,118	19,516	5,723	57	22,131	12,925	1,036,470	35,295	1,001,175	19,334
Second "	1,001,175	20,015	4,581	46	22,372	13,000	1,061,189	37,362	1,023,827	18,071
Third "	1,023,827	20,466	3,441	34	22,560	13,058	1,083,386	38,969	1,044,417	17,149
Fourth "	1,044,417	20,876	2,049	20	27,531	13,098	1,107,991	40,059	1,067,932	21,466
Total Operating Deficits.....										$168,137
Per cent of Total Plant.....										19.41

[2]Cost of plant at close of quarter; does not include working capital.

468 6. Operating deficits:

The method in arriving at the amount of operating deficits is as follows:

Column 1.—The period of development is divided into a six months' preliminary period, a two years' construction period, and a two years' operating period, taken by the quarter year.

Column 2—Represents the cost of the plant at the beginning of the quarter, including the Working Capital. After the first quarter it includes 8% on the investment, 8% on the additions to date, operating expenses, reserve for replacements, less telephone operating revenues.

Column 3.—Interest at the rate of 8% per annum is calculated on Column 2.

Column 4.—Addition to Plant, including Working Capital. The additions to plant are determined by multiplying the cost per station by the stations gained during that quarter. The Working Capital was distributed through the development period in accordance with the plant growth as shown on accompanying statements, headed Working Capital.

Column 5.—Interest at the rate of 8% per annum calculated on Column 4.

Column 6.—This column is headed "Operating Expenses" and is made up of ten different expense items of which a summary and a detailed description follows.

Summary of Operating Expense as Shown in Column 6 of Operating Deficits.

	Plant maintenance.	Station removals and changes.	Traffic.	Commercial.	Revenue collecting.	Directory.	General.	Uncollectible.	Taxes.	Rent deductions.	Total operating expense.
First Year of Operation:											
First Quarter.....	$4,212	$1,212	$7,053	$2,342	$555	$505	$1,852	$89	.....	$487	$18,307
Second "	4,260	1,423	7,053	2,342	652	593	1,852	105	.....	487	18,767
Third "	4,302	1,609	7,053	2,342	737	670	1,852	119	.....	487	19,171
Fourth "	4,339	1,770	7,053	2,342	811	738	1,852	130	4,761	487	24,283
Second Year of Operation:											
First Quarter.....	4,370	1,906	9,404	2,342	873	794	1,852	103	.....	487	22,131
Second "	4,395	2,018	9,404	2,342	924	841	1,852	109	.....	487	22,372
Third "	4,415	2,105	9,404	2,342	964	877	1,852	114	.....	487	22,560
Fourth "	4,428	2,163	9,404	2,342	991	902	1,852	117	4,845	487	27,531
											$175,122

470 6. Operating Deficits:

Column 6. Operating Expenses.

Plant maintenance expense:

This item of expense is obtained as follows:

Plant Maintenance Expense, year ending June 30, 1916.. $17,599.41

The per cent of Maintenance to plant in service is then computed as follows:

$17,599.41 ÷ 866440 = 2.0312% per annum.
.5078% per quarter.

Computed quarterly in the average plant in service as follows:

First year of operation:	Total plant in service beginning of quarter.	Average plant added during quarter.	Total average plant in service.	Maintenance. .5078% per quarter.
First Quarter	824,537	4,983	829,520	4,212
Second "	834,503	4,429	838,932	4,260
Third "	843,361	3,875	847,236	4,302
Fourth "	851,111	3,321	854,432	4,339
Second year of operation:				
First Quarter	857,753	2,768	860,521	4,370
Second "	863,289	2,214	865,503	4,395
Third "	867,717	1,661	869,378	4,415
Fourth "	871,039	969	872,008	4,428

471 6. Operating deficits (continued):

Column 6, operating expenses (continued):

Station Removals and Changes:

The cost of Station Removals and Changes was determined by applying the actual expense of Station Removals and Changes for the year ending June 30, 1916, to the average number of stations as follows:

Station Removals and Changes for year ending June 30, 1916	$8,296.00
Average Number of Stations	6,712
Average per station per year	1.24
Average per station per quarter	.31

First year of operation:	Average No. of stations in service.	Total cost per quarter @ .31 per station per quarter.
First Quarter	3,909	1,212
Second "	4,589	1,423
Third "	5,189	1,609
Fourth "	5,709	1,770
Second year of operation:		
First Quarter	6,149	1,906
Second "	6,509	2,018
Third "	6,789	2,105
Fourth "	6,979	2,163

Traffic Expense:

During the first year of operation it is assumed that 75% of the total operating expenses will be incurred, and the second year 100%.

The actual Traffic Expense for the year ending June 30, 1916, was $37,614

First Year 75% of 37,614 = 28,211 per annum.
7,053 per quarter.

Second Year 100% of 37,614 = 37,614 per annum.
9,404 per quarter.

472 6. Operating deficits—continued.

Column 6. Operating expense—continued.

Commercial expenses:

Commercial Expenses for the first and second year of operation will be as follows:

Actual Expense for year ending June 30, 1916..$9,368 per annum
2,342 " quarter

This Commercial Expense is constant for two years.

Revenue collecting:

The cost of Revenue collecting will increase with the growth in stations and is determined by applying the cost per station for the year ending June 30, 1916, to the growth in stations as shown below.

Total Cost for year ending June 30, 1916.....	$3,812
Average Number of Stations in service.....	6,712
Average Cost per Station per annum 3812 ÷ 6712 =.....	.5679
Average Cost per Station per Quarter.....	.1420

First year of operation:	Average number of stations in service.	Revenue collecting per quarter @ .1420 per station.
First Quarter	3,909	555
Second "	4,589	652
Third "	5,189	737
Fourth "	5,709	811
Second year of operation:		
First Quarter	6,149	873
Second "	6,509	924
Third "	6,789	964
Fourth "	6,979	991

473 Directory expense:

The Directory Expense is determined by taking the actual expense for the year 1916 and reducing it to a per station basis.

Actual Expense for the year ending June 30, 1916	$3,467
Average Number of Stations in service	6,712
Average Cost per Station per annum	.5165
" " " " " quarter	.1292

This cost per station per quarter applied to the stations in service per quarter is shown below:

First year of operation:	Average number of stations in service.	Directory expense per quarter @ .1292 per station.
First Quarter	3,909	505
Second "	4,589	593
Third "	5,189	670
Fourth "	5,709	738
Second year of operation:		
First Quarter	6,149	794
Second "	6,509	841
Third "	6,789	877
Fourth "	6,979	902

General expenses:

The General Expenses *was* obtained by taking the actual expense for the year ending June 30th, 1916 and applying it quarterly.

General Expense per annum	$7,408.00
General Expense per quarter	1,852.00

474 Uncollectible items:

The amount of uncollectibles for the year ending June 30th, 1916, was divided quarterly *in* the basis of per cent of revenue per quarter, as follows:

Total for year ending June 30th, 1916 ..... $443.00

Per Cent Annual Revenue per Quarter.

First year of operation:

First Quarter	20.15%	x $443.00	= $89.00
Second "	23.66%	x 443.00	= 105.00
Third "	26.75%	x 443.00	= 119.00
Fourth "	29.44%	x 443.00	= 130.00

Second year of operation:

First Quarter	23.27%	x 443.00	= 103.00
Second "	24.63%	x 443.00	= 109.00
Third "	25.69%	x 443.00	= 114.00
Fourth "	26.41%	x 443.00	= 117.00

475 Taxes:

Taxes applicable to operation in first and second years of operation are determined by taking the taxes assignable to operation for the year ending June 30th, 1916 and applying this to the amount of plant in service at the close of the first and second year- of operation as follows:

Taxes assignable to operation for year ending June 30th, 1916 ..... $4,845.00

Per cent of plant in operation:

First year of operation—857,753 ÷ 872,977 ..... 98.26%

Taxes first year of operation:

4,845.00 × 98.26% 4,761.00

Taxes second year of operation:

4,845.00 × 100.00% 4,845.00

Rent deductions:

This includes rentals of telephone offices, use of pole lines and miscellaneous. Actual rentals have been taken for the year ending June 30th, 1916, and prorated quarterly.

Total Annual Rent Deductions $1,947
Average Rent Deductions per Quarter 487

476 Column 7—Reserve for replacements:

The Reserve for Replacements was obtained by applying the proper rates to the various elements of plant in service at the middle of each year of operation.

Percentage for first year of operation 6.01
Percentage for second year of operation 6.01

These percentage rates were then applied to the average plant in service for each quarter.

Column 8—Total:

Total of Columns ..... 2 + 3 + 4 + 5 + 6 + 7

477 Column 9—Total operating revenues:

The average revenues per station per quarter was determined from the total of the Exchange Service Revenue, the Toll Service Revenue, and the Miscellaneous Operating Revenue for the year ending June 30th, 1916, as follows:

Total for Year ending June 30th, 1916 ..... $154,233.00
Average number of Stations 6,712
Average Revenue per Station 22.98
Average Revenue per Quarter 5.74

	Avg. stas. in service during quarter.	Toll revenue per quarter @ $5.74 avg. rev. per sta. per quarter.
First year of operation:		
First Quarter	3,909	$22,438.00
Second "	4,589	26,341.00
Third "	5,189	29,785.00
Fourth "	5,709	32,770.00
Second year of operation:		
First Quarter	6,149	35,295.00
Second "	6,509	37,362.00
Third "	6,789	38,969.00
Fourth "	6,979	40,059.00

Column 10—Cost of plant at end of quarter:

Column 8, Column 9.

Column 11—Operating deficits:

Columns 3 + 5 + 6 + 7 = 9.

478 Mr. Gleed: Now, in this computation of the costs of establishing the business have you been careful to exclude everything that has entered into the cost of building the plant?

A. Yes, sir.

Q. And the amount that you arrived at in the way you have described amounts to 26 per cent, did you say, of the cost of the physical plant?

A. It amounts to 25.92 per cent.

Q. You had reduced that in your final estimate of what it would cost to establish the business by.

A. I used 20 per cent.

Q. You cut down these various estimates of the cost of the different elements that enter into the problem, you cut that from 26 to 20 and give that as your final conclusion?

A. Yes. I might add that I have computed the cost of establishing the business for a number of exchanges in Missouri and in Kansas and the percentage of these costs to the reproduction cost now ranges from 24 to 30. I have seen it computed in other companies of telephone property all the way from a single exchange to the company as a whole and in all cases the results were around 20 per cent.

Mr. Gleed:

Q. Now, finally, Mr. Kositzky, in regard to the valuation, state if you know what it would cost to reproduce all that the company has here, physical plant, corporate organization, trained operating forces, existing contracts, established relations with the public and relations with other companies as they now exist?

A. It would cost not less than $1,073,083.

479 (*e*) The "working capital" used amounted to $1,051,167.00 and was the working capital actually required and used in the business.

(*f*) Until this case (August, 1919), the Commission had made a formal valuation of only (*a*) The Caruthersville exchange as of September 30, 1913, (*b*) the St. Louis exchange as of December 31, 1913, and (*c*) the Springfield exchange as of September 30, 1916.

(*g*) While it was impossible in the short time allowed by the Commission to make a complete and detailed inventory and appraisal of all of the Southwestern Company's properties in the State of Missouri, recent complete and detailed inventories and appraisals had been made for 96.17% of the total property, and were adjusted and used in the complete appraisal presented at the hearing. The remaining 3.83% of the total property was valued in the following manner: (1) For 2.15% of the total property accurate office records were used; and (2) for the remaining 1.68% of the total property the cost per station method was used. A list of all of the exchanges in the State showing the method of valuation used, whether or not the appraisal had been filed with the Commission in a previous case and whether or not the Commission had decided the case, is as follows:

Exhibit 87.

Method of Arriving at Reproduction Cost New, Southwestern Bell Telephone Company's Property in Missouri.

September 26, 1919.

480 Recent Filed Appraisals with No Net Additions.

Exchange.	Date of appraisal.	Filed with Commission in previous case.	Previous case decided by Commission.
Poplar Bluff	June 30, 1919	Yes.	No.
Sedalia	February 1, 1919	No.	No.
St. Joseph	May 1, 1919	No.	No.
Warrensburg	June 30, 1919	No.	No.
Toll Plant	Nov. 15, 1918	No.	No.

Recent Field Appraisals Plus Net Additions.

Armstrong	Mar. 31, 1919	No.	No.
Aurora	April 15, 1918	Yes.	Yes.
Brookfield	June 1, 1918	Yes.	No.
Carrolton	Sept. 30, 1918	Yes.	No.
Chaffee	June 9, 1918	Yes.	No.
Charleston	Mar. 31, 1918	Yes.	Yes.
Chillicothe	Feb. 28, 1918	Yes.	No.
Fayette	Mar. 31, 1919	No.	No.
Glasgow	Mar. 31, 1919	No.	No.
Hannibal	May 15, 1918	Yes.	No.
Kirksville	Dec. 1, 1917	Yes.	Yes.
Lamar	July 18, 1918	Yes.	No.
Lancaster	Feb. 28, 1918	Yes.	Yes.
Lees Summitt	Mar. 29, 1918	Yes.	No.
Marceline	July 28, 1918	Yes.	No.
Marionville	Jan. 15, 1919	Yes.	No.
Moberly	Sept. 15, 1918	Yes.	No.
Monette	May 15, 1918	Yes.	No.
Neosho	July 8, 1918	Yes.	No.
Oran	June 12, 1918	Yes.	No.
Pierce City	May 8, 1918	Yes.	No.
Senath	Jan. 15, 1919	Yes.	No.
Sikeston	June 1, 1918	Yes.	No.
Slater	July 21, 1918	Yes.	No.
Stanberry	July 25, 1918	Yes.	No.
Trenton	June 22, 1918	Yes.	No.
Webster-Kirkwood	Dec. 31, 1917	Yes.	Yes.

Appraisals with Net Additions to December 31, 1916, to which Has Been Added 25% Plus Net Additions Since.

Exchange.	Date of appraisal.	Filed with Commission in previous case.	Previous case decided by Commission.
Caruthersville	Sept. 30, 1913	Yes.	Yes.
Clayton	Dec. 31, 1913	Yes.	Yes.
Malden	Aug. 31, 1917	Yes.	Yes.
Marshall	Dec. 31, 1916	Yes.	No.
Springfield	Sept. 30, 1916	Yes.	Yes.
St. Louis	Dec. 31, 1913	Yes.	Yes.

481 Appraisals Made from Accurate Office Records.

Carthage	June 30, 1919	No.	No.
Ferguson	June 30, 1919	No.	No.
Mexico	June 30, 1919	No.	No.
New Madrid	Nov. 15, 1918	Yes.	Yes.
St. Charles	June 30, 1919	No.	No.

Total valuation of last five exchanges above enumerated, $586,746.00 or 2.15% of total exchange valuation in State.

Total number of stations in the last five exchanges above enumerated, 3050 or 2.18% of total stations in State.

Appraisals made on per-station basis, the per station cost being obtained from an average of nine comparable exchanges in which recent field appraisals had been made. Valuations are as of June 30, 1919.

Exchange.

Benton.
Bismark.
Bloomfield.
Blue Springs.
Campbell.
Cardwell.
Clarkton.
Dexter.
East Prairie.
Essex.
Eureka.
Glenwood.
Grain Valley.
Greenwood.
Hayti.
Higbee.
Hornersville.
Kennett.
Lilbourne.
Monroe City.
Morehouse.
Noel.
Paris.
Portageville.
Republic.
Seligman.
Smithville.
Southwest City.
St. Clair.
Tarkio.
Valley Park.
Washburn.
Wentworth.

Total valuation of exchanges last above enumerated $459,-
482 198.00 or 1.68% of total exchange valuation in State.

Total number of stations in the exchanges last above enumerated, 3651 or 2.61% of total stations in State.

The appraisals for the following exchanges were filed with the Commission on the following dates:

Exchange.	Date of appraisal.	Date filed with commission
Brookfield	June 1, 1918	1918 (Summer.)
Carrollton	Sept. 30, 1918	1918 (Fall.)
Chaffee	June 9, 1918	1918 (Summer.)
Charleston	Mar. 31, 1918	1918 (Spring.)
Chillicothe	Feb. 28, 1918	1918 (Spring.)
Hannibal	May 15, 1918	1918 (Summer.)
Kirksville	Dec. 1, 1917	1918 (Spring.)
Lamar	July 18, 1918	1918 (Summer.)
Lancaster	Feb. 28, 1918	1918 (February.)
Lees Summit	Mar. 29, 1918	1918 (May.)
Malden	Aug. 31, 1917	1917 (Summer.)
Marceline	July 28, 1918	1918 (Fall.)
Marionville	Jan. 15, 1919	1919 (Spring.)
Marshal	Dec. 31, 1916	1917 (January.)
Moberly	Sept. 15, 1918	1918 (Summer.)
Monett	July 8, 1918	1918 (Summer.)
Neosho	May 15, 1918	1918 (Summer.)
Oran	June 12, 1918	1918 (Summer.)
Pierce City	May 8, 1918	1918 (Spring.)
Poplar Bluff	June 30, 1919	1919 (Fall.)
Senath	Jan. 15, 1919	1919 (Spring.)
Sikeston	June 1, 1918	1918 (Summer.)
Slater	July 21, 1918	1918 (Fall.)
Springfield	Sept. 30, 1916	1916 (September.)
Stanberry	July 25, 1918	1918 (Summer.)
St. Louis	Dec. 31, 1913	1914
Trenton	June 22, 1918	1918 (Summer.)
Webster Groves—Kirkwood	Dec. 31, 1917	1918 (January.)
Aurora	April 15, 1918	1918 (June.)
Caruthersville	Sept. 30, 1913	1914
Clayton	Dec. 31, 1913	1914
New Madrid	Nov. 15, 1918	1918 (December.)

483 (*h*) The engineer for the Southwestern Company testified:

Q. Now, Mr. Robinson, would you be able today, or this month, to get any responsible persons to contract forthwith to reproduce any one of those exchanges at the value or amount of money that you have named in your inventory?

A. I don't believe I would.

Q. You said that in constructing a telephone exchange labor would be 50 per cent higher than it would have been in 1914 or

1915, and materials would be 50 per cent higher. And yet, some of these inventories dating quite a distance back you have added only twenty-five per cent. There is an apparent discrepancy there. What is the explanation of that?

A. Well, there is a possible chance that a particular exchange would not cost fifty per cent more, and in order to be conservative I added twenty-five per cent. That is, I think telephone property as a whole would cost fifty per cent more to construct today than it did before the war, but there may be some peculiarity about any individual exchange which would make it unwise for me to state that that particular exchange would cost fifty per cent more, although I am of the opinion that any exchange probably would cost fifty per cent more.

484 (*i*) No receivers, transmitters or induction coils are included in the foregoing figures. These instruments are the property of the American Telephone and Telegraph Company and are furnished to the Southwestern Company under the 4½% license contract hereinafter referred to.

(*j*) The record shows the following as to the qualifications of the engineers who made the above and foregoing inventories and appraisals:

485 J. J. ROBINSON, being first duly sworn on behalf of the Company, testified as follows:

Direct examination.

By Mr. Gleed:

He is general plant superintendent of the Southwestern Bell Telephone Company, residing at St. Louis, with twenty years' experience in the telephone business. He has testified before the Commission numerous times and discussed his qualifications quite extensively in those cases.

J. J. ROBINSON, being first duly sworn, testified for the company as follows:

Mr. Robinson is general plant superintendent of the Southwestern Telegraph and Telephone Company. He has been engaged in the telephone business for fifteen years in the plant department. He has charge of the plant engineering.

Q. What connection, if any, have you with the Southwestern Telegraph and Telephone Company?

A. I am employed as general plant superintendent.

Q. How long have you been engaged in the telephone business in any capacity?

A. Fifteen years.

Q. How long have you been in connection with the plant department?

A. Fifteen years.

Q. Now, in connection with that department what, if anything, have you to do with the plant engineering?

A. I have charge of the plant engineering.

Q. Now, in connection with your work in the plant de-
486 partment, as plant engineer and general superintendent of the plant, have you had occasion to become acquainted with the cost of constructing the various parts of a telephone?

A. Yes, sir.

Q. And are you familiar with the cost of constructing the various parts of a telephone plant such as the St. Louis plant?

A. Yes, sir; I am.

Q. Have you made any special or particular study in order to gather the necessary evidence to qualify yourself to advise the Commission of the cost of putting in any of the property in the plant in St. Louis?

A. I have.

Q. So, in making the detailed study of costs of various articles, you have used your own personal experience, demonstration and investigation and actual figures carried on the books of the company?

A. I have.

Q. Who assigned the unit costs?

A. The unit costs were developed by the forces in my department; I assisted in that work, or I had charge of that work.

Q. On what were they based? On your experience or the experience of the men working with you?

A. They were based on my experience, the experience of the men working with me and a study of the actual performances of the working forces during the year 1913 as derived from the daily time and material reports turned in by the field forces as a report of their performance.

487 G. A. KOSITZKY, being duly sworn, testified on behalf of the Company as follows, to-wit:

Mr. Kositzky is an engineer. He is a graduate of the University of Nebraska and Cornell University, from which he received the degrees of Mechanical and Electrical Engineer. After graduating he began telephone work for the New York & New Jersey Telephone Companies and associated companies. At first he was an estimate clerk engaged in estimating the cost of doing various kinds of telephone work. He held this position for about one and one-half years and then was promoted to construction engineer, which position he held until 1909, about two and one-half years. His work in this position consisted in preparing plans, writing specifications and estimating the cost and supervising the construction of telephone property. He was then transferred to the Pacific Telephone & Telegraph Company of California, where he was division plant engineer. His duties with the Pacific Company were the same as his duties for the New York and New Jersey Telephone Company. During the time he was with the Pacific Company he supervised and person-

ally handled about $4,000,000.00 worth of construction work. After this work was done he returned to the New York & New
488 Jersey Telephone Company, which had changed its name to the New York Telephone Company, and supervised telephone construction work for that company for about one year, when he was transferred to St. Louis as plant engineer. From St. Louis he was transferred to Kansas City in the same position, after which he was promoted to the position of general plant superintendent for the Missouri & Kansas Telephone Company. He held this position about five years. This company then operated 99 exchanges in the western half of Missouri and all of Kansas. His duties consisted in the engineering, construction and maintenance of all the company's property. In this position he was responsible for new construction, replacements and economy in that work.

Mr. Gleed:

Q. You were Plant Superintendent for Missouri and Kansas then for about four years prior——

A. Five years.

Q. About five years?

A. Yes, sir.

Q. Prior to this time?

A. Yes, sir.

Q. Won't you tell the commission what were the different duties of that position?

A. Principally to take care of the company's property. In detail it was the engineering, construction and maintenance, or maintaining all of the company's property in this company.

Q. Were you responsible for new construction?

A. Yes, sir.

Q. For replacements?

A. Yes, sir.

Q. For economy in that work?

A. Yes, sir.

Q. One of these exchanges operated by the Missouri & Kansas was Springfield, was it?

A. Yes, sir.

Q. Now, will you explain to the commission how the work
489 that you have done for these various companies affected your qualification to estimate in advance the cost of doing telephone work?

A. My entire experience was in making estimates, and an estimate, I might explain, was for the purpose of describing or showing the necessity for doing the work, also estimating the cost of that particular job. Those estimates are then submitted to the executives who cause a suitable appropriation to be made for that work.

Q. Let's see if I understand you. The first part of the estimate indicates roughly the work to be done?

A. If you wish to have that described more in detail I might——

Q. I wish you would describe an estimate a little bit in detail.

A. An estimate consists of the following: First the complete specification which shows the extent of the work and how the work should be done. It also shows the detailed units, quantities of the work together with the detailed units for doing that work. It has also a section which is called the outline of plan which describes in detail why the work was recommended, why it was necessary, and the face sheet, as we call it, the first sheet, shows a summary of the expenditures and a brief description of the work together with the necessity for doing the work and suitable blank spaces for the approvals of the executives.

Q. What is the object or purpose of doing work on estimates?

A. It is to show the executives what is necessary and the amount needed for that work.

Q. To advise them how much money they will have to——

A. Appropriate.

Q. Appropriate or get?

A. Yes, sir.

Q. Is there supposed to be any economy in doing it
490 by estimates?

A. I can't say that there is only that the estimates are prepared accurately and our work is carefully supervised. At the completion of a particular estimate or job a report is made showing exactly what was spent. We have to give detailed reasons if we have exceeded any item of the estimate more than 10%.

Q. If when the job is done it runs over the estimate are you liable to be called on the carpet?

A. Yes, sir; we have to come and explain. In fact we can't change an estimate without proper authority and the work must be completed within the amount prescribed on the estimate.

Q. Do all these companies that you have worked for do work in that way upon estimates previously made?

A. Yes, sir; that is customary with all Bell companies.

Q. Does that in any way help your statistics, doing it that way?

A. Yes, the accounting of the actual cost of the work is kept in an estimate record and when the job is completed we know what each element costs. It is then reported to the auditor, who places the amounts spent on the general books of the company.

Q. So, if I understand you, after you had done a piece of work you have always compared the actual result with the initial estimate?

A. Yes, sir; that's right.

Q. And if there was any great variance you had to give good reason for that?

A. Yes, sir.

Q. What experience have you had, Mr. Kositzky, in inventory or listing telephone property?

A. I have had charge of making inventories in the Missouri and Kansas Company for a number of years; in fact, since I have been with that Company we have inventoried at least 50 exchanges for various purposes. In 1915, I also had supervision of making a general inventory of these 99 exchanges, which this Missouri & Kansas Company owned at that time.

491 4. Revenues:

Both the Commission and the Southwestern Company took the months of May, June, July and August, 1919 as a representative period for a study of the revenues and expenses of the Southwestern Company. This period of May, June, July and August, 1919, will be hereinafter referred to as the four months' period.

The exchange rates established by the Postmaster General were put in effect on May 1, 1919, and the toll rates were established on June 14, 1919.

The Southwestern Company's annual gross revenues for the State of Missouri amounted to $7,039,806.00 (the four months' period put on an annual basis). The annual increase in gross toll revenues under the postmaster General's rates amounted to $100,000.00 per year. Since the toll rates were not put in effect until June 14, 1919, the four months' period contained only 2½ months of the toll increase. Therefore, in order to make the four months' period a truly representative period, and in order to make the toll revenue what it would have been had the increased rates been in effect for the entire four months' period, it is necessary to add $37,500.00 to the gross revenue of $7,039,806.00, making a gross annual revenue of $7,057,306.00. The Southwestern Company overlooked this point in presenting the evidence, but the Commission, in its decision, made the adjustment and the addition which was right and proper.

There is no dispute in regard to the revenues, it being agreed that the sum of $7,057,306.00 fairly represents the gross revenue for a year's operation under the increased rates.

492 5. Expenses:

Based upon the said four months' period of May, June, July and August, 1919, the annual expenses claimed by the Southwestern Company amounted to a total of $6,313,006.00, and the annual expenses claimed by the Commission amounted to $5,472,689.00. The difference between the evidence submitted and the findings of the Commission relative to expenses are shown by the following table:

Annual Expenses.

	Company basis.	Commission basis.	Commission under.
Expenses, exclusive of charge for depreciation reserve....	$4,056,285	$4,056,285	.....
4½% payment.....	316,452	142,404	$174,048
Charge for depreciation reserve	1,707,269*	1,224,000†	483,269
Increased expenses on acct. of increases in wages effective July and August.....	183,000	.....	183,000
Strike expense.....	50,000	50,000	.....
Total expense.....	6,313,006	5,472,689	840,317
Balance net income.....	726,800	1,604,617	877,817‡
Per cent balance net income..	2.3%	7.9%	5.6%‡

Only three items of expense are in dispute. The amounts of these items of expense are not disputed as being incorrect, but the propriety of paying them is called in question by the Commission. These three items are the four and one-half per cent payment, the charge for depreciation reserve, and increased expenses on account of increases in wages effective in July and August.

493 (*a*) Increased Expenses on Account of Increases in Wages in July and August.

The Southwestern Company's accountant testified as follows in regard to these increases in wages in July and August, 1919.

494 He prepared a statement showing the total salaries and wages of the Southwestern Bell Telephone Company in the State of Missouri charged to operating expenses only for January of 1917 as compared with June, 1919. These salaries and wages charged to operating expenses alone from January, 1917, to June, 1919, increased $990,468.00, or 44 per cent. This statement was introduced in evidence as Exhibit 9, and is as follows:

*6% of $28,454,488. (Reproduction cost of structural plant.)
†6% of $20,400,000.
‡Commission over.

EXHIBIT 9.

Southwestern Bell Telephone Company (Mo.).

Total Salaries and Wages Charged to Operating Expenses in State of Missouri.

(Annual Basis.)

January, 1917	$2,236,548
June, 1917	2,363,312
January, 1918	2,585,724
June, 1918	2,604,612
January, 1919	2,821,092
June, 1919	3,227,016

Increase June, 1919, over January, 1917, $990,468.

Per cent of increase June, 1919, over January, 1917, 44 per cent.

He prepared a statement showing the difference between the operating expenses in April, 1919, and June, 1919, which shows an increase in that time of about seven hundred thousand dollars. This statement correctly shows what it purports to show. "It was taken from the records of the company; shows the actual conditions." This statement was introduced in evidence as Exhibit 10 and is as follows:

495

EXHIBIT 10.

Southwestern Bell Telephone Company (Mo.).

Summary of Operating Expenses, etc., for the State of Missouri

Annual Basis.

	Year, 1918.	April, 1919.	June, 1919.
Operating Expenses, Labor	$2,662,662	$2,853,212	$3,227,016
Operating Expenses, Other than Labor	1,017,755	913,163	1,301,445
Depreciation	1,188,573	1,485,982	1,494,696
Taxes	463,405	470,400	470,400
Rent	190,724	238,792	229,620
4½% Payment	309,005	328,909	355,428
Uncollectibles	28,800	30,000	30,000
Total	$5,860,924	$6,320,458	$7,108,605
Increase over Year 1918		$459,534	$1,247,681
% Labor to Total Expenses	45%	45%	45%
% Labor to Operating Expenses	72%	75%	71%

The increase in operating expenses for the month of June, 1919, over the whole year of 1918 was $1,247,681.00, or 21 and a fraction per cent.

He prepared a statement showing the earnings and expenses for the month of April, 1919, and the earnings and expenses for the month of June, 1919, giving a comparison between the actual results of those two months. This statement was introduced in evidence as Exhibit 11 and is as follows:

EXHIBIT 11.

Southwestern Bell Telephone Company (Mo.).

State of Missouri.

Statement Showing Increase in Revenue in June, 1919, *Over April*, 1919, *and Increase in Expenses Since April* 30, 1919.

Total gross telephone revenues, June, 1919		$8,605,785
Total gross telephone revenues, April, 1919		7,893,898
Increase in gross revenues		$711,887
Increase in expenses:		
(*a*) Increase in operating expenses:		
June, 1919	$533,161	
April, 1919	465,106	
Increase	$68,055	
$68,055 × 12 =		$816,660
(*b*) Increases to employees in July, 1919		64,000
(*c*) Increases to employees in August, 1919		203,000
(*d*) Increase in taxes (estimated)		60,000
Total increase in expenses		$1,143,660
Leaving a decrease in net operating revenue of		$431,773

496 Q. Going on with this Exhibit 11. You have an item there of increases to employes in July, 1919. Did you get that from the books?

A. No, sir; that figure is not obtained from the books. That is an estimate based on the increases which were actually granted to the employees as of July 31st.

Q. It would be reflected, however, in the actual operations of the month of July, or at least in the month of August?

A. The books not being closed for July, I was not able to get the actual. But I have seen from some records that the actual increase in pay rolls for the month of July was about a hundred and twenty

thousand dollars, as against sixty-four thousand, due to increases, and the increase amounted to about double.

Q. Where did you get the item of increases to employees in August?

A. That was determined the same way as the increases in July; based on an estimate of what the increases as granted in August amounted to.

Q. You know increases were granted in July and in August?

A. Yes, sir. They were actually given to the employes.

Q. And that is your calculation as to what they will amount to in a year?

A. Yes, sir; annual basis.

The item of $64,000 on Exhibit 11, representing increases to employes in June, 1919, is obtained by summarizing the increase which was granted the employes based on the number of employes who received increases put on an annual basis. Of this, the operators got thirty thousand dollars; the commercial department, five thousand; the plant department, eighteen thousand, and the general department, about eighteen thousand, making a total of seventy-one thousand. However, seven thousand dollars was deducted as the proportion of the increase to plant employes, which is chargeable to construction and not included in the figures on Exhibit 11. The item representing increases to employes in August, 1919, which on an annual basis is $203,000, are: Operators, $133,000; commercial department, $10,000; plant department, $98,000; general department, $1,000, deducting, as in the estimate for July the increase to plant employes, which is chargeable to construction.

497

EXHIBIT 20.

Southwestern Bell Telephone Company, State of Missouri, Exclusive of Kansas City and Independence.

Revenues and Expenses for Four Months Ended August 31, 1919.

Exchange Revenues	$1,708,498	
Toll Revenues	600,756	
Miscellaneous Revenues	34,670	
Total Operating Revenues	$2,343,924	
Licensee Revenue —Dr.	105,484	
Balance Operating Revenues		$2,238,440
Maintenance Expenses	$325,041	
Traffic Expenses	540,162	
Commercial Expenses	172,511	
General Expenses	90,535	
Total Operating Expenses		1,128,249
Net Operating Revenues		$1,110,191

Uncollectible Operating Revenues	$5,788	
Taxes Assignable to Operations	157,600	
Total		$163,388
Balance Operating Revenues		$946,803
Net Nonoperating Revenues		2,678
Total Gross Income		$949,481
Rent Deductions	$60,173	
Miscellaneous Deductions from Income	285	
Total Deductions		$60,458
Balance Net Income Available for Depreciation and Return		$889,023

Strike Expense Not Included.

This exhibit shows the actual income for May, June, July and August, 1919. These four months are fairly typical as to gross income, but are not fairly typical as to net income, because there were large permanent increases in wages granted in July and August which are not reflected.

Q. You said something about it not being typical—what is your notion about it being typical or otherwise?

A. In July and in August there were certain increases granted which naturally will not be included in a four months' statement, which includes May and June, those increases only being effective in July in some cases, and in August in others—if we were to make four months' study of expenses based on actual wages of August you would get a different figure than what you will get for four months, which do not include that.

498 Q. You are talking about the net?

A. That has the result on the net.

Q. What I asked was, were they fairly typical as to income?

A. I would think that these four months would be fairly typical.

Q. But because there were large permanent increases granted in August you don't think the net is exactly prothetic of what confronts you?

A. That is my idea.

The strike expenses, which are not included in this exhibit, if not allowed in any other way, will have to come out of the balance net income, 11.65 per cent, which is therefore net income for depreciation, return and strike expenses.

The total capitalization of the company not invested in telephone property directly is invested in stocks, bonds, notes and other securities of other companies, which yield an average return of 6.8 per cent.

499 In commenting upon Exhibit 20, which was a statement of the actual revenues and expenses for May, June, July and August, 1919, the Southwestern Company's accountant testified:

This exhibit shows the actual income for May, June, July and August, 1919. These four months are fairly typical as to gross income, but are not fairly typical as to net income, because there were large permanent increases in wages granted in July and August which are not reflected.

Q. You said something about it not being typical—what is your notion about it being typical or otherwise?

A. In July and in August there were certain increases granted which naturally will not be included in a four months' statement, which includes May and June, those increases only being effective in July in some cases, and in August in others—if we were to make four months' study of expenses based on actual wages of August you would get a different figure than what you will get for four months, which do not include that.

Q. You are talking about the net?

A. That has the result on the net.

Q. What I asked was, were they fairly typical as to income?

A. I would think that these four months would be fairly typical.

Q. But because there were large permanent increases granted in August you don't think the net is exactly prophetic of what confronts you?

A. That is my idea

The Southwestern Company's General Traffic Superintendent testified as follows:

Q. Assuming that you have at least got your wages up high enough to hold the girls that you now have, and that you don't have to increase your basic schedule of wages at all, how much more would you be paying these same girls in a year or a year and a half from now than you are paying them now, in gross money, for the state?

A. Relatively a dollar or a dollar and a half a week more per girl.

Q. That is something you have definitely contracted to do for them?

A. Yes, sir.

Q. And every girl that stays a year or a year and a half——

A. Will get that increase.

500 A. On June 30th, 1919, the Company had between 3,400 and 3,500 girls. Excluding the girls at Kansas City and Independence, there would be left about 2,600 girls in the State of Missouri. The increase of one dollar to one dollar and a half a week per girl is about seventy-five dollars per girl per year which multiplied by 2,600 girls makes approximately $200,000.00 a year increase in the State of Missouri, excluding Kansas City and Independence. The Company is now short about 200 girls, excluding Kansas City and Independence.

What a girl receives after she is thoroughly trained depends on the scale in the particular town where she works. A girl in St. Louis with a year's service with her differentials—we pay differentials, time and a half for over time, Sunday and Holiday work, one dollar if a girl works after seven o'clock in the evening, and a dollar and a half for a girl who works all night—about fourteen dollars per week. They work six days per week. If one should work on Sunday, she would get a day off in the middle of the week. Girls in St. Louis start at $10 per week in the training school under the schedule placed in effect August 1st, 1919.

Q. If you are 200 short, and in a year from now you bring the force up to normal, how much will you be paying them on account of bringing them up to normal in numbers?

A. I would say in round figures, $2,800 a week, times 52, would be about $150,000. If the wages which they are now being paid are high enough to hold the girls, the identical girls, without reference to additional girls hired to handle additional service, the present girls will be drawing about $200,000 a year more in a year or a year and a half from this time, if they remain with the company. If the shortage of girls has been made up and there are 200 girls more in a year or a year and a half from date than there are now, that will make an addition to the pay roll of about $150,000 per year more than is reflected by the present figures. Therefore, if the present force is brought up to its proper number for the State of Missouri, and then is brought to the average experience they had in 1916, the Company is confronted with an expenditure of about $350,000 more than is reflected by the figures presented in this case.

The Southwestern Company's General Plant Superintendent testified as follows:

In the summer of 1918, we made a very large wage increase to all our plant employes in the State of Missouri. I believe practically ecery exchange was affected by that wage increase. I am told by the people who have been here with the M. & K. and the Southwestern Bell Telephone Company of Missouri longer than I have been
that it was the largest wage increase ever made in the his-
501 tory of those companies. We were forced to make that wage
increase in order to hold our people. That was the first consideration. And there was another very serious consideration, and that was this:

That many of our older employes, through committees, informed us that they had no intention of leaving the Bell telephone service; That they had spent the best part of their lives learning that business—the telephone business; but they believed that the business should pay them a fair living wage, and that they naturally looked to the company to see that they were given a fair living wage. We thought we met the situation in September, 1918, by this large increase I have described, but in May, 1919, we were forced to make another wage increase practically as large as the increase made in September, 1918. And the result of both these increases was that we didn't find people—skilled telephone workers—offering

their services to the company in any appreciable degree. Neither did these wage increases stop the force losses. We were unable to build up any construction force; and in August, 1919, we were again forced to make a further wage increase greater in amount than the wage increases of May of this year. Further than that, it was necessary for us to commit ourselves to wage schedules, which will result, within the next year, in a considerable increase in the average wage paid to all our employes. I believe that schedule to which we have committed ourselves will result in an increase of from 10 to 15 per cent of the average wage a year from now over what the average wage is today.

Q. You have a scale that increases with length of service, just as you have in the traffic department?

A. Yes.

Q. And if you are able to hold the men you now have you are afraid it will run 15 per cent increase in a year, without any increase in the basic wage?

A. Yes, I believe that to be so.

Q. About how many men have you in your department?

A. I have about 850.

Q. In 1915 you say their average wage was about $69.00 a month?

A. In 1915 it was about $63.00 a month.

Q. Now it is 50 per cent above that?

A. Yes, it is now $97.00 a month, and must increase to over $100 a month within a very short time. I expect to see that close to $110.00 a month within a year.

Q. And even then will it be higher than men of similar training and experience are drawing in other lines of work?

A. No, it will not. Unfortunately, our financial condition has been such that we have trailed behind other employers who hired men of similar training and skill.

502 (*b*) Charge for Depreciation Reserve.

A rate of 6% for annual depreciation is agreed upon as a fair rate. The difference between the Commission and the Southwestern Company in regard to this item of expense is simply as to the proper base upon which to build up the reserve account. The Southwestern Company applied the percentage for reserve for depreciation to the reproduction cost of the structural plant, to-wit: $28,454,488.00, while the Commission applied the percentage to the valuation found by it, $20,400,000.00.

(*c*) Payment under the License Contract.

The last of the differences between the Southwestern Company's contentions as to proper expenses to be allowed and what the Commission actually found is the payment under the license contract, often referred to as the four and one-half per cent payment.

The following is a true copy of the license contract under which the Southwestern Company is now and was during 1919 operating:

503 *Agreement Between American Telephone and Telegraph Company and Southwestern Bell Telephone Company (Missouri) Covering Telephones, Services, Licenses and Privileges.*

Memorandum, dated this 25th day of November, 1919, stating and reaffirming the contractual relations now and heretofore existing between the parties hereto in connection with the furnishing of telephones and licensing their use, and the licensing of telephonic apparatus suitable for use in connection therewith, and the furnishing or various services and privileges, by the American Telephone and Telegraph Company, a corporation organized under the laws of the State of New York, hereinafter called the "Licensor," to the Southwestern Bell Telephone Company, a corporation organized under the laws of the State of Missouri, hereinafter called the "Licensee."

Whereas, the Licensee is now and heretofore has been conducting a telephone business within the territory hereinafter defined, as a part of the Bell System, under certain license contracts in Forms 109 D, for Exchanges, 113 D, for Extra-Territorial Connecting Lines, and 116 C, for the Supply of Telephones for Private Lines and Other Purposes, each dated November 26, 1887, from the American Bell Telephone Company, a corporation organized under the laws
504 of the Commonwealth of Massachusetts, as the owner of Letters Patent of the United States granted to Alexander Graham Bell March 7, 1876, and January 30, 1877, numbered 174,465 and 186,787, respectively, and as the owner of, or as having the right to use, sundry other inventions which then were or might thereafter be embodied in electric speaking telephones, said license contracts also covering other such inventions which said The American Bell Telephone Company might thereafter own or have the right to use; and,

Whereas, the Licensor, as the successor in interest of said The American Bell Telephone Company in and to said license contracts, has assumed and is now and heretofore has been continuously discharging all of the obligations of said The American Bell Telephone Company under said license contracts; and,

Whereas, by mutual agreement of the parties thereto said license contracts have heretofore been modified in various respects, as shown by letters, by written agreements and by the practice of the parties evidenced by a continued course of dealings between them; and,

Whereas, the Licensor and the Licensee now desire for purposes of convenience to state in one instrument and reaffirm the contractual relations that now exist and have heretofore existed between them in respect to said matters;

Now, therefore, this instrument witnesseth that said contractual relations have heretofore been and now are as follows:

1. It is understood that the Licensor and the Licensee respectively have succeeded to all the rights and liabilities of the parties
505 to said license contracts.

2. For the purposes of this memorandum:

(*a*) The word "telephone" means either a magneto telephone or a battery transmitter with induction coil.

(*b*) An "exchange" means a system in which different stations on the same or different circuits, and either within any city, town, borough or village, or within a radius of fifteen miles of a central office, are connected with such central office or branch offices, for the purpose of placing subscribers or other parties by such circuits in communication with such central or branch offices, or with each other, either directly or through the agents of the system.

(*c*) An "extra-territorial connecting line" means a line connecting an exchange, as hereinbefore defined, with points without the territory of such exchange and within the territory of the Licensee in order to establish telephonic communication between the patrons of such exchange and parties at such points reached by said line.

(*d*) A "private line" means a line consisting of only a single circuit both ends of which are located wholly within the territory of the Licensee, which shall not be permanently or temporarily connected with any other circuit, and the telephones on which shall be used only for the individual and private business of the patron and only by him or his employes, and upon which no business shall be transacted for any consideration or toll to be paid by other persons than the patron or other parties named in the lease of telephones, and over which shall be transmitted no messages in respect
506 of which, or of the transmission, collection or delivery of which, any consideration or toll is to be paid by any other person. But no one of the stations of a private line or of the lines of private intercommunicating systems shall be used as an exchange office, or be permanently or temporarily connected with a telephonic exchange system.

(*e*) A "private intercommunicating system" means an arrangement of equipment consisting of a switchboard or equivalent apparatus with operating telephone and telephone stations connected thereto, providing for telephonic intercommunication between the stations and having no connection with a telephonic exchange system. In other respects, the use is limited as above stated for private lines.

3. The Licensor, at the warehouse of the Western Electric Company, Incorporated, most convenient to the territory of the Licensee and from which the last named company delivers to the Licensee telephonic apparatus, will deliver to the Licensee, as needed, telephones made and to be used under the Licensor's patents, as herein set forth and permitted; the Licensor to keep continuously in stock a sufficient number of telephones to insure prompt deliveries. All

telephones delivered to the Licensee shall be deemed to be furnished hereunder unless otherwise specially designated by the Licensor. They will be of such character and pattern and bear such marks as the Licensor shall from time to time determine, but the Licensee may choose from among such standard patterns. Each of said telephones shall remain the property of the Licensor, and is leased, and the use of each licensed, under all patents under which the Licensor
507 has or may have the right to license, so far as applicable thereto, for the purposes herein declared. The licensee has the right to use said telephones and to grant such right of use to its patrons or to other parties in its territory, as hereinafter provided, for the purposes and to the extent herein limited, upon condition that and so long as the payments hereunder shall be duly paid to the Licensor and the provisions hereof are not violated, but not longer or otherwise, (1) upon circuits exclusively composed of the lines of any of its exchanges; (2) upon extra-territorial connecting lines whether furnished in whole or in part by or for the Licensee; (3) in connection with the trunk lines reserved to the Licensor by Article 5; (4) with the approval of the Licensor, upon the telephone systems of other parties for use in the territory of the Licensee under and in accordance with its regular sub-licensee or connecting agreements with such parties; (5) in connection with other telephones, not furnished or licensed by the Licensor, which are used on farmers' lines, so-called, or lines of a similar character, on lines operated by railroads, and on lines and exchanges operated by sub-licensee or connecting companies and wholly located in the territory of the Licensee and not connected with the lines and exchanges in the territory of any other licensee of the Licensor; provided that all such other telephones shall be of such a type, and the lines upon which they are used shall be maintained and operated at such a standard of efficiency, as will not in the judgment of the Licensor unduly impair the quality of the service furnished over the joint
508 lines of such users and the Licensee; (6) upon private lines and lines of private intercommunicating systems.

The Licensee shall not directly or indirectly connect with the trunk lines reserved to the Licensor by Article 5 any line or telephone exchange, except lines or exchanges which it has been specially authorized by the Licensor to connect with said trunk lines.

All rights not specifically granted to the Licensee remain to the Licensor.

The Licensor will not not furnish or license any telephones to be used by others upon an exchange within the territory of the Licensee while its rights hereunder exist, except telephones to be used on the lines of exchanges having their central offices outside the territory of the Licensee by persons within said territory who are or may be subscribers to or patrons of such exchanges; nor will the Licensor furnish or license any such telephones to be used by others upon extraterritorial connecting lines while the rights of the Licensee hereunder exist; provided, however, that the Licensee shall furnish or cause to be furnished exchanges and lines sufficient to satisfy all reasonable demands of the public for exchange and toll line service

within said territory and shall furnish such service at rates that are just and reasonable.

This article shall not be so construed as to prevent the Licensor in its discretion from authorizing the Western Electric Company, Incorporated, or its successors and assigns, to sell telephone receivers and transmitters of any type in the open market to all buyers.

4. The Licensor will license the use of the inventions in call-bells, switches, switchboards, and other telephonic devices, ap-
509 paratus, methods and systems needed for the telephone lines of the Licensee which it can so license, upon the same terms for the Licensee as for others under similar circumstances but such call-bells, switches, switchboards and other telephonic devices, apparatus, methods and systems shall not be disposed of by the Licensee without the consent of the Licensor except to those so licensed by the Licensor to use them or to the licensed manufacturers of the Licensor.

5. The Licensee may enjoy any of the Licensor's rights-of-way and similar franchises of the Licensor to maintain its lines, which the licensor can permit it to use, when and so long as, in the judgment of the Licensor, it shall not interfere with the enjoyment thereof by the Licensor or its other licensees, and shall pay whatever may be due to third persons, if anything, growing out of or in connection with such use by it, and may, to the extent and under the conditions aforesaid, use the Licensor's overhead and underground facilities for supporting or carrying wires (both open and in cable) upon paying a pro rata share of the cost of constructing and maintaining them, computed in accordance with the existing practices of the parties or such other reasonable compensation as may be agreed upon. For trunk lines from the several exchange offices to points outside of the respective exchanges, the Licensor may, without further compensation, enjoy all rights of the Licensee to construct and maintain lines which the Licensee can permit it to use, when and so long as, in the judgment of the Licensee, it shall not interfere with the enjoyment thereof by the Licensee, and may, to
510 the extent and under the conditions aforesaid, use the Licensee's overhead and underground facilities for supporting or carrying the Licensor's wires (both open and in cable) upon paying a pro rata share of the cost of constructing and maintaining them, computed in accordance with the existing practices of the parties, or such other reasonable compensation as may be agreed upon. The Licensor reserves the right to use telephones on lines passing over the routes or any or either of them of the lines of the Licensee, and connecting, with each other or with said exchanges, places with which the Licensee is not authorized to connect, for the purpose of establishing personal communication or transmitting messages between such places and between such places and said exchanges. The Licensee will also allow the Licensor to connect the wires of any such lines with its said lines in order to constitute thereby a thorough line, of which the Licensee's lines or any or either of them or any part of either of them can form a portion or

link, in order to forward through communications or messages; will make or permit to be made convenient switchboard or other connections for that purpose, and as compensation for such use of its lines and for making such connections will take a share of the through toll (terminal expenses being first deducted) pro rata according to distance, not greater than that customarily charged by it for like distances, and will also allow any telephone exchange located outside the territory of the Licensee to be designated by the Licensor to connect with the Licensee's lines for the purpose, and substantially in the manner and upon the terms herein provided in respect to such trunk line connections. In respect of all
511 communications or messages originating on its lines and which are to be routed or forwarded over any other lines, the Licensee shall require the patron or subscriber to bind himself to pay the tolls thereon and to make every communication or message subject to such contracts, stipulations and limitations of liability of such other lines as the Licensor may from time to time require, in such form as it may from time to time prescribe, and will hold the Licensor harmless from all loss or expense consequent upon the Licensee's failure so to do. Whenever the consent of a commission or other public tribunal to the use by the Licensor or the Licensee of the plant or other facilities of the other is required by law, no agreement made under and pursuant to the provisions of this paragraph shall be effective until such consent is obtained.

The Licensor may enter the offices and connect with the exchanges of the Licensee any lines to points without the territory of the Licensee or to points within said territory for connection with which the Licensee is not authorized to use telephones furnished hereunder, in order to establish communication between patrons of such exchanges and parties at such points reached by said lines, and may there operate said lines with suitable appliances; the Licensee will permit its patrons to use such lines, and by its own operators will handle such communications or messages to and from its patrons, or make the proper switchboard or other connections for direct communication, as may be requested, and in such manner, not inconsistent with the proper conduct of its office, as the Licensor shall direct. But if the Licensor is not satisfied with the manner
512 in which it is performed, it may establish its own offices and trunk and radiating lines for such purpose.

6. The Licensee will cause each of its exchanges to route, over the lines of the Licensor and of such parties as the Licensor may from time to time appoint, all communications to points outside the Licensee's territory, or to points within said territory for connection with which the Licensee is not authorized to use telephones furnished hereunder, originating at such exchanges, on its lines, or at the exchanges or on the lines of its connecting companies within its territory, or coming on the wires or within the control of the exchange, where the Licensor or its said appointee has wires and will accept the same, so far as the Licensee can lawfully control the same and unless otherwise specially directed by its patrons, but the Licensee will not solicit such special directions or receive or pay tolls for

transmission over other lines unless compellable by law so to do. Each such communication on which the charge is reversed shall be considered as originating at the station against which the charge is to be made.

The Licensee shall keep and furnish an account of each such communication, and of connections made therefor, and shall collect and on demand pay over to the Licensor or its said appointees, respectively, the tolls for transmission beyond the exchange, according to such rates and rules as each shall establish, and shall exhibit its accounts and the tickets from which they are made, so far as may be proper to verify the same. The Licensee, in the handling of all business interchanged hereunder shall observe the
513 Licensor's operating methods and rules from time to time established for the use of its lines and shall keep such records and furnish such reports in respect thereto as the Licensor may from time to time request.

Each exchange shall, if and when so requested by the Licensor, make proper switchboard or other connection between the lines of the Licensor or its Licensees from points without such exchange and terminating in such exchange office, for the purpose thereby of making up a through line between points without such exchange. In respect of all the business referred to in this Article, the Licensee shall make no charge to its own subscriber or patron, but shall be entitled to the following compensation and none other: The Licensees shall receive, upon communications originating at an exchange or toll station of the Licensees or of a connecting company of the Licensee within its territory and passing over the trunk lines reserved to the Licensor by Article V, fifteen per cent of the amount received from the tolls for each such communication, not to exceed twenty cents for any one communication; provided, however, that whenever the party entitled to said toll employs the toll operator who has charge at or for the originating exchange of completing such communication, the sum to be received by the Licensee for each such communication shall not exceed ten cents, and provided further that the Licensee shall receive upon each such communication originating at a public telephone pay station of an exchange double the aforesaid compensation; the amounts so received as aforesaid by the Licensee to include compensation to the Licensee for the use of all facilities of an exchange furnished for and in con-
514 nection with such communications whether to or from such exchange, except the facilities required to establish connection between an exchange station and the toll switchboard in which said trunk lines terminate or between an exchange station and the toll trunks when such trunks are employed to effect connection with such toll switchboard; for the use of which excepted facilities the Licensee is compensated by its rates for exchange service in such exchange. In case an exchange shall be required to make a switchboard connection for the purpose of making up a through line between points without such exchange, the exchange shall receive, as compensation for making such connection, such compensation as may be agreed upon.

7. For telephones unlawfully detained from the Licensor or lost or destroyed otherwise than by fire or unavoidable casualty, the Licensee will pay to the Licensor such sum per telephone, not to exceed five dollars, as the Licensor may from time to time determine; but said payments shall not confer any right to the telephone, or to its use, or satisfy any other breach of covenant, or impair the right of the Licensor to obtain possession of any such telephone. The Licensor shall, at its own expense, replace or repair each defective telephone delivered to it for that purpose at the warehouse of the Western Electric Company, Incorporated, most convenient to the territory of the Licensee, and will, as the Licensee may from time to time request, deliver to it at said warehouse such parts for making replacements in telephones in service or on hand as it may then reasonably need; minor parts for such replacements to be furnished without charge and major parts, as defined from time to time
515 by the Licensor, to be paid for by the Licensee at the reasonable cost thereof, and all such major parts, whether intact, defective or broken, returned by the Licensee to the Licensor at said warehouse to be repurchased by the Licensor at the then current cost to it of corresponding new parts.

8. The Licensee admits the validity of all patents relating to telephony and telephonic appliances now or hereafter held by the Licensor or under which it may hold licenses exclusive in their character, and the validity of its title thereto, and will not dispute the same.

9. The Licensee is entitled to receive from the Licensor, in addition to all other services and benefits accruing hereunder to the Licensee, the following described services and privileges:

(*a*) The right to use, subject to the provisions herein set forth, all telephonic devices, apparatus, methods and systems covered by patents now or hereafter owned or controlled by the Licensor or which it may have the right to authorize the Associated Companies of the Bell System to use, and also the right to use, subject to the provisions herein set forth, as and when completed and standardized, all new and improved apparatus and developments in the art of telephony resulting from the research and experimental work conducted by or under the direction of the Licensor and hereinafter referred to; and, without expense to the Licensee, protection and defense against and to be saved harmless from all actions or suits, charging infringement of patents, arising out of the use of telephones furnished hereunder to the Licensee; as well as ample provision for protecting and defending against, and insuring the
516 Licensee against judgments for damages and profits in, all actions or suits, charging infringement of patents, arising out of the use of any apparatus, methods or systems which the Licensor may recommend.

(*b*) The continuous prosecution by the Licensor of the fundamental work of research, investigation and experimentation in the development of the art and science of telephony and in the develop-

ment of plans, methods, systems and ideas designed to promote safety, economy and efficiency in the equipment, construction and operation of the telephone plants of the Associated Companies of the Bell System, and the direction by the Licensor of the development work by others for the production of materials and apparatus necessary for rendering the products of such work of the Licensor available for use by such Associated Companies.

(c) Advice and assistance in general engineering, plant, traffic, operating, commercial, accounting (including the auditing of accounts), patent, legal, administrative and other matters pertaining to the efficient, economical and successful conduct of the telephone business of the Licensee; such advice and assistance to be given by the Licensor through the issuance to the Licensee of data, discussions and conclusions, including bulletins, books, circular letters, and standard specifications and blue prints, and through the performance of specific work in cases of unusual magnitude and complexity where such work is necessary or desirable.

(d) Advice and assistance in any financing required to be done by the Licensee in the extension, development or improve-
517 ment of its telephone system within its said territory and in the general matter of its finances; aid in securnig funds on fair terms, as and when needed for new construction and other expenditures, but not, at any time, to a greater extent than the then condition of the finances and credit of the Licensor may permit; active assistance in the marketing of the Licensee's securities; and such other necessary financial support and assistance in the premises as will tend to serve the best interests of both Companies.

(e) The right to extend to the subscribers and other patrons of the Licensee and of its connecting companies within its said territory the privilege of using, upon payment of the regular tolls therefor, the connections provided for in said license contracts between its system and the systems of the other Associated Companies of the Bell System for telephonic communication between such subscribers and other patrons and the subscribers and other patrons of such Associated Companies and of their connecting companies in their respective territories.

(f) Active assistance, co-operation and support in connection with the adoption from time to time by the Licensee of such measures as will, in the united judgment of the parties hereto, best protect and preserve the health and promote the well-being in employment of the employes of the Licensee and, in other ways, conserve the high quality of its service to the public through the maintenance of a stable, contented and efficient personnel; the continued maintenance by the Licensor, in accordance with and subject to the terms of the agreement heretofore made by the parties hereto for the interchange of the benefit obligations of the plans heretofore adopted by
518 them, respectively, and each entitled "Plan for Employes' Pensions, Disability Benefits and Death Benefits," and at not less than its original amount of the Fund heretofore established by the Licensor under its said Plan; and the continued right to the

Licensee, whenever at any time the Fund established under its said Plan shall be insufficient for the performance of its obligations thereunder, to have recourse, to the amount of the deficiency, to said Fund of the Licensor in accordance with and subject to the terms of said agreement for the interchange of benefit obligations.

(*g*) The right to the Licensee, for the betterment of the service throughout its said territory, to extend to its connecting companies within its said territory, on such terms and conditions as it may determine, the benefit of such engineering and other technical advice and information in respect to construction, maintenance, repair and operation of plant as the Licensee may receive from the Licensor.

10. In order that the foregoing services may be promptly and efficiently performed when needed by the Licensee, the Licensor will:

(*a*) Render available for use by the Associated Companies of the Bell System all products of the Licensor's fundamental work of research, investigation and experimentation, and all inventions, discoveries and patents, and all methods and systems covered by patents, relating to the art of telephony, or all apparatus and appliances, methods and systems embodying such inventions, discoveries and patents, which, after investigation, experimentation and tests, are in each case pronounced by the technical experts of the Licensor to be of advantageous and practical usefulness in telephony and
519 recommended for use, and to this end, if any patent rights held by others in any such invention or discovery are necessary to make such invention or discovery available for such use, the Licensor will, in case such invention or discovery relates to telephones, acquire the requisite patent rights therein, and, in case such invention or discovery relates to other than telephones, provide suitable arrangements for making the apparatus, appliances, methods and systems embodying such invention or discovery available for use as aforesaid; provided that each such acquisition or arrangement can, in the judgment of the Licensor, be consummated on reasonable terms.

(*b*) Maintain continuously an organization of specialists trained in the various branches of the work required to be done by the Licensor in rendering the foregoing services, of such numbers and possessed of such technical knowledge and experience as will enable said work to be so done as to relieve the Licensee from the necessity of attempting to perform said work for itself.

(*c*) Maintain continuously or cause to be so maintained proper circuit and other facilities for connections, as herein provided, between the said system of the Licensee and the systems of the other Associated Companies of the Bell System for telephonic communications between the subscribers and other patrons of the Licensee and of its connecting companies within its said territory and the subscribers and other patrons of such other Associated Companies and of their connecting companies within their respective territories.

11. In consideration for said license contracts and for all benefits accruing to the Licensee hereunder, the Licensee is paying
520 and shall continue to pay to the Licensor a sum equal to four and one-half per cent (4½%) of the total gross earnings of the Licensee, which shall be payable in monthly installments, as herein provided, and in accordance with the established practice of the parties hereto, and shall be computed as follows: Such total gross earnings shall comprise the following accounts described and defined in the Licensor's Accounting Circular No. 8, Standard Telephone Accounts, Bell Telephone System, issued under date of December 28, 1912: Account 500 Subscribers' Station Revenues, Account 501 Public Pay Station Revenues, Account 504 Private Exchange Lines, and Account 510 Message Tolls. From the total of such accounts, shall be deducted Account 304 Uncollectible Operating Revenues. To the difference between the aforesaid revenues and the aforesaid deductions therefrom shall be added (*a*) the sum of Seventy-five Cents (75c) per telephone per month for all telephones not in use in excess of three per cent (3%) of the total number of telephones standing charged to the Licensee on the last day of such month, said three per cent (3%) representing the maximum number of telephones believed to be necessary to be kept in stock by the Licensee, and (*b*) for sublicensed or other operating telephone companies not under license contracts from the Licensor and in which the Licensee owns a majority of the capital stock, the same proportion of their gross revenues computed as aforesaid as the proportion of their stock which is owned by the Licensee; provided, however, that, on application by the Licensee for the exclusion of such gross revenues of any such sublicensed or operating company, the
521 question shall be carefully considered and determined on the facts in each such case.

The amount of each installment of said sum equal to four and one-half per cent (4½%) of the Licensee's total gross earnings due for each month shall be determined by such total gross earnings of the second preceding month, computed in the manner aforesaid, and a statement, over the signature of the proper accounting officer of the Licensee, of its total gross earnings for each calendar month, computed in the manner aforesaid, with the number of telephones in use and in stock in its territory on the fifteenth day of said calendar month shall be sent to the treasurer of the Licensor, or to such other officer of the Licensor as it may theretofore, designate, on or before the twenty-fifth day of the next succeeding month and payment in Boston or New York funds shall be made on or before the tenth day of the month next following, that being the month for which such payment is due. Further statements of telephones shall be made by the Licensee at such times and in such detail as the Licensor may from time to time request.

The Licensee will make such reports, giving such information regarding the operations of its exchanges and lines as the Licensor may from time to time request.

12. If the Licensee shall fail to pay any sums due hereunder for thirty days after the same shall become payable, or shall violate any

other terms or conditions of this memorandum, and shall persist in such default, violation, or neglect or fail to remedy or repair the same for sixty days after written notice thereof from the Licensor, or shall become bankrupt or insolvent, the Licensor may, if
522 it shall so elect, by written notice to the Licensee, terminate all rights of the Licensee hereunder, and may resort to any of its rights and remedies in law or in equity, under the patent laws or otherwise, including the remedy by injunction against the Licensee or those claiming under it, for the use of any of its patented inventions or telephones not justified by a subsisting license hereunder, or for the violation of any other of its rights. The Licensor may also upon such termination, if it so elects, take possession of all lines, switchboards, fixtures, apparatus, appliances, and premises of the Licensee used for carrying on its business, and occupy and operate the same, or connect such lines with offices of its own; and collect from any patron, subscriber or other party all sums then or thereafter due to the Licensor or to the Licensee for the use of any telephones, circuits and appliances, or under any subscription contract or under any sub-license or connecting agreement for the interchange of business; and may enforce these provisions by an entry, without being deemed guilty of any trespass, or by legal process, including an injunction to prevent any interference with the Licensor (and others permitted by it) in the use of said telephones, lines, switchboards, fixtures, apparatus and appliances. The property so taken, which does not belong to the Licensor or revert to it hereunder, may be returned within three months from the taking, in which case it shall pay to the Licensee a reasonable compensation for its use, or the Licensor may retain the same as its own property and shall pay therefor a reasonable price (not exceeding the actual cost) within four months after the taking, and shall account to the Licensee for all sums collected which accrued before the
523 Licensor became so entitled to possession, deducting all expenses incident thereto, and all that may be due to it. These rights and remedies of the Licensor shall, in case of any default, if the Licensor shall so elect, apply only to the exchange or exchanges in which such default has occurred. The Licensor may also use the name of the Licensee to protect the Licensor's interests and to enforce the Licensor's rights hereunder, and the Licensee shall execute assignments in accordance herewith.

13. The contractual relations hereunder are personal to the Licensee, and any assignment or attempt to assign its rights hereunder or the lines established hereunder or any or either of them, by act of the party or operation of law, without the written consent of the Licensor, will be good ground for a cancellation hereof by the Licensor. The Licensee will keep and observe all the stipulations herein contained on its part to be kept and performed. Whenever the Licensor grants to others the rights for exchanges or any of its rights under Articles V and VI hereof or for connecting lines or any other rights remaining to it, the stipulations hereof relating thereto shall be binding upon and inure to the benefit of such grantee.

and the Licensor shall not be responsible for their acts or defaults. If the Licensor shall transfer to any party who shall agree to perform the stipulations hereof, its title to the telephones furnished and licensed hereunder and the patent rights under which they are licensed, and its then existing rights hereunder, the provisions hereof shall inure to the benefit of and be binding upon such party in respect of all things done or to be done after such assignment,
524 as if it were named a party hereto, and the Licensor shall no longer be responsible hereunder.

14. The Licensee shall assume and pay any and all taxes, whether federal, state, county, municipal or other, which may be assessed for or on account of or by reason of the telephones furnished or business done hereunder, to whomsoever assessed.

15. The rights of the Licensee hereunder shall be perpetual, unless sooner determined as herein provided, and the territory hereinabove referred to as the territory of the Licensee is as follows, viz.:

The states of Arkansas, Kansas and Missouri, and the counties of Monroe and St. Clair and the Township of Venice in Madison County, in the State of Illinois; except that the Licensee shall have no right to use telephones furnished hereunder, except in connection with the trunk lines reserved to the Licensor under the provisions of Article V hereof, for the purpose of communication between the following points, to wit:

(1) Between any point in the State of Arkansas and any other point in the territory of the Licensee covered by this memorandum.

(2) Between any point in the City of St. Louis, the counties of Adair, Audrain, Bollinger, Boone, Butler, Callaway, Cape Girardeau, Carter, Clark, Cole, Crawford, Dent, Dunklin, Franklin, Gasconade, Howard, Howell, Iron, Jefferson, Knox, Lewis, Lincoln, Macon, Madison, Maries, Marion, Miller, Mississippi, Monroe, Montgomery, New Madrid, Oregon, Osage, Pemiscot, Perry, Phelps, Pike, Pulaski, Ralls, Randolph, Reynolds, Ripley, St. Charles, St. Francois, Ste. Genevieve, St. Louis, Schuyler, Scotland, Scott, Shannon, Shelby, Stoddard, Texas, Warren, Washington and Wayne, and that
525 portion of Cooper County included within the exchange limits of Boonville as they now exist or may hereafter be established, all in the State of Missouri, and the counties of Monroe and St. Clair and the Township of Venice in Madison County, in the State of Illinois, and any other point in the territory of the Licensee covered by this memorandum.

16. Said license contracts, as now and heretofore in effect and as evidenced by this memorandum, are hereby in all respects ratified and confirmed.

In Witness Whereof, the parties hereto have caused their respective corporate seals to be hereto affixed and these presents to be sub-

scribed in their names and behalf by their respective officers thereto duly authorized.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY,
By H. B. THAYER,
Vice-President.

Attest:
[SEAL.] A. A. MARSTERS,
Secretary.

SOUTHWESTERN BELL TELEPHONE COMPANY,
By E. D. NIMS,
President.

Attest:
[SEAL.] J. P. CROWLEY,
Secretary.

526 All the testimony in regard to the 4½% license contract is as follows:

527 The following exhibit was prepared by Mr. Scott, the accountant in this case, at the request of Commissioner Blair at the hearing and forwarded to the Commission by mail:

Southwestern Bell Telephone Company, State of Missouri, Excluding Kansas City, Mo., and Independence.

Valuation of Instrument Service as of June 30, 1919.

Line number.		
1.	Actual number of sets in use June 30, 1919 (total transmitters plus total receivers divided by 2)	139,994
2.	Actual sets not in use	3,984
	(Actual percentage sets not in use for the State June 30, 1919, 2.85.)	
3.	Total number of sets chargeable to the State June 30, 1919 (Line 1 + Line 2)	143,978
4.	Total subscribers stations, State of Missouri, auditor's report June 30, 1919	140,316
5.	Ratio of sets to stations June 30, 1919 (Line 3 ÷ Line 4)	1.026

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6.	Est. total annual cost per set as per detail on sheet No. 2	$0.961
7.	Average annual cost of inst. service per station on basis of ratio of June 30, 1919 (Line 5 × Line 6)	$0.986

Line number.		
8.	Total 4½% payment State of Mo. year ending June 30, 1919	$262,795.63
9.	Average stations Mo. year ending June 30, 1919	137,722
10.	4½% payment per station year ending June 30, 1919, on basis of average stations for that year (Line 8 + Line 9)	$1.908
11.	Deduct value of instrument service above (Line 7)	$0.986
12.	Estimated amount of payment per station per year for other than instrument service (Line 10—Line 11)	$0.922
13.	Estimated amount of payment per station per month for other than instrument service (Line 12 ÷ 12)	$0.077
14.	Estimated total Missouri payment for other services than instrument service year ending June 30, 1919 (Line 9 × Line 12)	$126,979.68
15.	Estimated total payment for instrument service State of Mo. year ending June 30, 1919 (Line 8—Line 14)	$135,815.95

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Detail.

Annual Cost per Set.

*First cost set of instruments (trans., receiver & coil)	$4.10
Stock to insure continuity of supply 6% .06 × 4.10	.246
Total	$4.346

Annual cost per set in hands of company—

Return on investment 8% .08 × 4.346	.348
Reserve for replacement 10% .10 × 4.346	.434
Repairs (based on average for the entire country) $.049	.049
Administration 1% .01 × 4.346	.043
Reserve for contingencies 2% .02 × 4.346	.087
Total	$0.961

	Transmitter.	Receiver.	Induction coil.	Cost per set.
*Pre-war cost	$1.50	$1.14	$.55	$3.19
Present cost	2.00	1.50	.95	4.45

Total cost per set used in connection with this study 4.10

530 Southwestern Bell Telephone Company, State of Missouri, Excluding Kansas City and Independence.

Relation of Value of Instrument Service to Total 4½% Payment.

	For four months ended August 31, 1919.	Annual basis.
Total 4½% payment (Scott Exhibit No. 20)	$105,484	$316,452
Estimated value of instrument service:		
Total company owned stations 6-30-19=140,316		
Annual cost of instrument service per station=$.986		
140,316 Stations × $.986=$138,351	46,117	138,351
Balance, estimated total payment for services other than instrument service	$59,367	$178,101

531 WILLIAM J. HISS, being duly sworn, testified on behalf of the applicant as follows:

Mr. Hiss is general manager of the Southwestern Telegraph and Telephone Company of Missouri, and has been in that position since November 1st, 1912.

Q. What was your business prior to that time?

A. In June of 1895 I graduated from Lehigh University with the degree of electrical engineer. On the first of the following July, which was 1895, I entered the employment of the Metropolitan Telephone and Telegraph Company as draftsman. The name of that company was later changed to the New York Telephone Company. I remained in the employ of the New York Company in various capacities principally in connection with the building and maintaining of plant until the end of 1908, at which time I became division commercial superintendent of the Long Island Division of the New York and New Jersey Telephone Company with headquarters at Brooklyn, New York. I remained there for fourteen or fifteen months and then became general manager of the Western Division of the New York Telephone Company with headquarters at Buffalo, New York, and on November 1st, 1912, I became general manager of the Bell Telephone Company of Missouri, the name of which company was later changed to the Southwestern Telegraph and Telephone Company.

Q. Have you made any study of the history of the telephone industry in the City of St. Louis?

A. I have; yes, sir.

Q. I would like to have you give the Commission the his-
532 tory of it as far as your inquiry and investigation goes, briefly, but fully taking up the various periods.

A. I would like, Mr. Harris, to go back and trace the early history of the telephone industry and then come to the City of St. Louis.

Q. You may go as far back as your investigation goes.

A. It is largely a matter of history and I will be very brief with it. The telephone was invented in 1876 at which time it was considered more of a scientific toy than anything else. It was not considered of any particular commercial value. Its first practical use was for private lines merely connecting two points, such, for instance, as the office and the factory or an office and a coal yard, but with the improvements and the transmitters and receivers, it became possible to carry on conversation over greater distances, so that the use of the private lines had a tendency to increase. With this increased use of the private lines, there developed the necessity for communication between the parties having these private lines. This necessity for communication was really the mother of the invention of the switchboard. The next step was the development of the switchboard, which, of course, in the first place was extremely crude in character. Then came the building of the toll lines between towns. At first, these toll lines merely terminated in pay stations and for a long time that seemed to be the limit and it was necessary for the subscriber to leave his place of business or his residence and go to these toll lines, these pay stations, to carry on his conversation between towns. You will note that is in a way very similar to the condition that exists today in regard to transportation by the railroad or trolley. Then, through the further
533 development of these switchboards, we were able to connect these toll lines to the switchboard, making it possible to talk direct from a subscriber station to a nearby town. The final step was the extension of the toll lines, not merely between towns, but extension over the entire country, binding various systems together and giving universal service throughout the country within the limits of telephone communication. That, in brief, is more or less the development of the apparatus side of the question. Now, the development of the business side of the telephone has been brought about under the general direction of the American T. and T., which was, as you know, the pioneers in the development of the telephone industry. That if each of the local companies had endeavored to work out independently without this general guidance and direction of the parent company, it would have been impossible to have developed the art to its present state. The principles that have guided the American Company in furnishing the general telephone service have been general; we may say, have been twofold. In the first place, the local companies were formed to interest local capital and the local people, and those local companies being in touch with the local conditions were in a position to develop the business in those particular localities dealing directly, not only with the people,

but with the municipalities. By these local companies we worked out certain improvements and refinements in the art, and those improvements and refinements were placed at the disposal of the parent company who made investigations of them; took the original
534 thought and endeavored to find out if it could be broadened out so it could be used generally by the other operating companies throughout the country, and, if possible, it was so broadened out and placed at the disposal of the other operating companies. In this way considerable duplication of labor was saved, and the public were consequently benefited thereby. Then the parent company attended to all questions of patents and investigations and questions of the legal side of the business. They looked after the general financial questions, the general principles of design, general engineering schemes. That was the other side of the business development. Information covering all of those items have been placed at the disposal of the local companies. While each company has its own particular problems, the fundamental problems in the telephone industry are pretty much the same throughout the country.

Now, to get down to the history of the St. Louis exchange. Of course, Mr. Chairman, this is largely a history and the dates and data I have been able to accumulate, it isn't that I know first hand that these dates, and so forth, are correct. The first telephone was installed, brought here to St. Louis by Mr. H. H. Eldred in the fall of 1877, and connected to an old telegraph line between the M. M. Buck Stove Company's office on Second street and a newspaper office at the old fair grounds, in the northwestern portion of the city. It seems that this Mr. H. H. Eldred, as far as we can learn, was the same Mr. Eldred who the auditor testified to was one of the five original men in the old Bell of Missouri. Prior to the opening of the telephone exchange in St. Louis, messenger boxes were rented at $3.00 per month, and the messenger boys were furnished
535 at fifty cents per hour, and a very limited use of this service, which preceded the telephone service, amounted to about $25.00 a month. The first telephone exchange in St. Louis was opened by the American District Telegraph Company on May 1st, 1878, and this was the first telephone exchange, as far as we can learn, which was established west of the Mississippi River. The single grounded lines ran from the switchboard through the roof. Poles were not used at that time, the wires being merely strung from roof to roof. That is the condition that existed generally throughout the country. That was the early stages of construction, and it was on account of the damage that was done to property very largely that we got off the roofs. I remember in New York on Washington's birthday probably twelve years ago we had a very large number of these roof terminals. They consisted of upright pipes with cross-arms, and on those cross-arms were insulators to which wires were attached, and those wires spread out through the surrounding neighborhood two or three or four blocks usually and those roof terminals were so guyed down to the timbers of the roof, so that no matter which way the strain came the roof terminals wouldn't topple over. We prided ourselves a good deal at that time

on our engineering feat, that due to the scientific manner that these roof terminals were guyed down that none of them had ever gone over, but our pride had a fall at this time, during this great storm about twelve years ago, and the wires became covered, probably an inch in diameter, with sleet, but still none of the roof terminals went over, but a great many of them, due to the load, went
536 down through the roof, and following that was a decided rain storm which soaked the properties pretty generally and cost the New York company a vast sum of money, and that, to my mind, was one of the first disasters that taught us the lesson of getting off the roofs. But today in Europe, even in European capitals, you will see wires carried very largely on the roofs. The exchange was opened with forty subscribers. The initial expenditure was about $15,000 and about fifteen persons were employed. The rates were $50.00 a year to nearby subscribers and $60.00 a year to subscribers approximately twelve blocks away. These charges were for the receiver only which was used as the transmitter, the subscriber talking into it and then listening, and vice versa. If the transmitter was furnished, an additional charge of twenty dollars per year was made. Calls were received by boys at telephones attached to the walls of the operating room, and these boys gave the numbers of the telephones to be connected to the operator at the connecting or switching apparatus. That switching apparatus was the earliest stage, you might say, of the switchboard. It was very, very crude. I have heard descriptions of it, that it was a long board with holes in it where the connections could be made and hanging on the walls were plugs with different lengths of cords, and when the boy received a call to make a certain connection and he looked up to the board and saw about how far apart the two holes on the board were, and then he went to the board and selected the proper amount of cord with the plugs on the end and made the connection. In the meantime, of course, the subscriber was patiently waiting. The
537 telephone business was then called a venture and an immense amount of pioneer work had to be done to finance and develop it. The equipment and facilities were extremely crude and the service pretty uncertain and very unsatisfactory. The business was made to grow in spite of all its handicaps and in 1879 the Bell Telephone Company was formed. At this time there were approximately 525 telephones connected with the exchange. On May 1st, 1880, the rates were increased to $100.00 per year for all telephones, which rate included the transmitter and receiver. Later a rate of sixty dollars per year was established for residence service within a certain district. In the next five years three branch offices were opened in St. Louis.

The East St. Louis office was opened in 1884 with 23 subscribers. In 1883 the company began to set poles and to remove its wires from the roofs. I would like to, if I may, just as I go along pass along some photographs to give you an idea of the conditions that existed about that time. In 1885, the Law system, was adopted which enabled the operators at the switchboard to receive the calls

direct from the subscribers. The company at that time had approximately 1,400 subscribers in St. Louis.

In 1887, a Law switchboard, with a capacity of 1,800 subscribers, was installed, and the three branch offices in St. Louis were discontinued. The capacity of this board was increased until it became necessary in 1893 to open a branch office which was known as Lindell. At that time we had about 4,000 subscribers in the city. The first underground construction in St. Louis was done in 1895 in order to allow the removal of the poles from in front of Union Station.

538 The first common battery switchboard was installed in the Sidney office, which was opened in 1896, and in 1898 the present common battery switchboard was installed in the present building. At this time the metallic circuit, measured, coin and party line service were introduced. The Kinloch Exchange was opened early in 1899. The rates for direct line, metallic circuit business service was $150.00 per year. This was reduced to $10.40 per month in 1907 and to $6.50 per month in 1909. The rate for direct line metallic circuit residence service was $100.00 per year when first quoted, and has been gradually reduced to the present rate of $4.00 per month, or $48.00 per year. The party line and measured service has been gradually revised downward to the present rate. The last reduction in measured service was made in 1913, when the minimum business rates of $39.00 and $45.00 for two party and direct line measured service were established. The proposed schedule makes a still further reduction in these minimum rates by increasing the number of messages. Long distance connection with the lines of the A. T. & T. Company were made in 1896 and communication was secured with Chicago, Cincinnati and New York.

The company grew from 4,000 telephones in 1893 to 6,500 telephones in 1900. In 1900 the St. Louis exchange had four central offices in St. Louis and one in East St. Louis. The telephone development in the St. Louis exchange district grew to 28,000 in 1905; to 54,000 in 1910, and approximately 67,000 on December 31st, 1913. Since 1900 the company has established nine additional central offices in St. Louis and has placed its principal leads

539 under ground. The remarkable growth during the past fourteen years has been due principally to the establishment of rates for the smaller user, which was made possible by the introduction of the message rate on party line and coin service. That, in brief, is the history of the development in St. Louis.

The telephone system was first established, when first established in small towns consisted of a switchboard and a few lines. The cost of this plant was not very great. Its construction was simple. The switchboard was inexpensive, easily maintained; didn't require the service of experts such as switchboards today require. The lines were of iron wire on small poles, mostly confined to the center of the towns. Gradually, with the improvement in the apparatus, the number of stations increased and the lines spread throughout the towns. Now this simple system is fairly cheaply constructed and

easily maintained. It may grow to two or three hundred stations and those conditions will not materially change, but in a city with 60,000 to 70,000 stations, such as we have in St. Louis we have a very different condition. We don't have two or three hundred groups of two or three hundred subscribers each operated with this simple system, and over head lines, etc., but all of these stations are merged together in one great working organism so arranged that each station may at will be connected with every other station. Now in doing that there are plant and labor costs in tying these groups together that you don't have in the smaller places. Also if you had these groups of two or three hundred stations spread out in
540 a number of towns there would probably be toll charges between these towns, but when you get them in this compact area there are no toll charges, although very often the haul per message may be as long as it would if these groups were in towns separated by approximately the same distance. Also in a great city this simple overhead construction gives way to underground subways and underground cables in the business section of the city and we go further than that; even in the business sections we have what you call interior block construction. That is, we build a subsidiary pipe from our subway to an adjacent building and extend our lead-encased cables through the block, going along the rear of the buildings and putting terminals at convenient points from which wires are run to subscribers' instruments direct. Also we get out in the more densely populated sections of the city and take down the overhead wire and go into the lead-encased cable; that is more economical to maintain and it improves the appearance generally of the city, and this simple switchboard that I have described gives way to the multiple switchboard and associated with the multiple switchboard are the power plants and other complicated apparatus that is equally an expense to maintain.

Now, this simple switchboard, with two or three hundred lines, may cost four or five dollars per line, but a ten-thousand-line switchboard, fully equipped, would probably cost $22.00 or $23.00 per line. In rendering telephone service in a great city like St. Louis, I would like to picture to your mind that it is a vast and complex machine, both human and mechanical. We have to have a
541 very much higher grade personnel to handle and maintain a big plant than we do in a small plant. Other conditions enter into construction and maintenance of a plant in a large city. Take, for instance, one item of electrolysis—which is something that is a great enemy to our plant—in a small place, but in a large city like St. Louis, where there is considerable current, we have got a very decided damage from electrolysis to our plant, unless it is properly taken care of. At first, we had no idea of the cost of giving service. You see telephone development as I have endeavored to picture to your minds has gone through certain stages. We might say the first was the invention stage and following on that was the engineering stage when they endeavored to develop the apparatus, and with the development of the apparatus we came to the construction stage, where we learned the construction and the maintenance

of the telephone art, and today we have come to what might be termed the commercial stage. That is, we have a better idea today of what it costs to build a plant and to maintain a plant. We have a better idea on which to base our rate making. At first, these rates were high and entirely illogical. In fact, it has only been within the last ten years I should say that we had any definite basis on which to make a rate schedule. Since that time the rates have been worked out on a more logical basis. Prior to that time the whole business was in the experimental stage. It was a very undeveloped art. I would like to give some idea, taking a few instances, of what we have gone through in this development of the business. You take our construction methods of today are entirely the
542 result of our past experiences; our past experiments. While these experiments have, of course, been costly, they have been necessary. Take, for instance, the underground subway as we have it today in great cities. At first, when the wires were put underground the cables were merely buried in the ground, and to save damage in the streets being torn up it was found necessary to protect them, and then they placed them in troughs built of creosote boards. That was all right at the time you were laying them in, but when it came to putting in additional cables or tearing out a damaged cable we found it didn't work. It was found necessary to have a separate compartment and separate duct for each cable. In the first subway that was laid, if you can call it a subway, it was a single pipe; consisted merely of a pump log, which was simply a log of wood bored out. I have seen an old piece of that subway dug up in New York, consisting of a pump log with a three-inch hole in the middle. That was the first idea we had of the subway. Then they tried to build tubes or pipes of zinc and encase those in concrete, and that was pretty expensive and deteriorated rapidly. Then they had paper tubes which were buried in the ground, but in time those tubes became soft from the moisture and in drawing in the cable the fastenings between the rope and cable would tear a little of this paper loose, and as the cable was drawn in the paper rolled and rolled until it became of such size that it wedged the cable in there, and then we would have to take the cable out and try and clear that paper away, and sometimes it would be two or three times—we would pull the cable in and pull the cable
543 out—before we could finally get it through. Then they made quite a jump and went into iron pipe, but iron pipe was very expensive, and they found they couldn't afford to use iron pipe. They then came into creosote wood—separate pieces of wood about four inches square with a hole bored in the center, and these pieces of wood, which were four or five feet long, fitted into each other and made a continuous conduit. Then the last, and what we are using today, is clay tile, vitri-lized. The first subways were simply built of two-and-a-half-inch pipe of two-and-a-half diameter. That was as large as we thought it would ever be necessary to have it. We didn't think our cables would ever get so large that we couldn't get into a two-and-a-half-inch pipe, and this earlier con-

struction was single tile. Now we use them with two and four in one, which is very much more economical.

Now, another development has been in our cables. At first, the first cables we used after we conceived the idea of getting away from individual wires was rubber cover. We found that didn't work; it worked, but didn't have any great amount of life; then they conceived the idea of lead-encased cable. The wires were insulated with cotton and wrapped together and pulled into this lead pipe and then a compound of tar and rosin was pumped into this pipe. They were all right from a construction point of view, but the question of cost, it was almost prohibitive. Then later we worked along until we got what we have today, a paper-insulated cable. The wires are insulated with paper and the tire core, as we call it, is then covered with the pipe; it isn't drawn through. It is paired
544 on it, you might say, I don't know the correct term, and that has been through various stages until we have this cable today. We haven't any paraffin or compound in it at all. We have simply put a tire core paper in this lead tube. That seems very simple, but it has taken a great many years of experimenting to bring that about. Those experiments have been such that we are able to make our cables very much more cheaply than we ever could make them before. We can get so many more wires today in the same sized lead sheath. For instance, a fifty-pair cable ten years ago was as large as a 200-pair cable is today. Our cable-, of course, at first were all small. We hadn't any idea of building a big cable. I remember probably ten years ago we developed as large as a 120-pair cable. That was supposed to be a very decided advance. Today we are using a number of 600-pair cables. When I say pair cables I mean 600 pairs of wire in one cable, and we are preparing now to use 900 pairs of wires in one cable. This has all been brought about, you understand, generally by scientific study and experimentation. Those are merely two examples of the development of the art in our construction and the same was gone through with in the development of the art of our mechanism generally; our switchboards and power plants have all gone through very much the same general study.

Mr. Harris:

Q. Why do you refer to the cables and wires as pairs of wires?

A. Originally we had what we called ground circuits. We simply had one wire with the ground line. Today we have what is called the metallic circuit, entirely insulated from the earth, both outgoing and returning, and we call those two wires a pair of wires.

Now, these developments and improvements in the art that
545 have been developed through the American Company and through the co-operation between local companies and American company have been accepted generally as standard methods and standard construction. They have been adopted not only by the Bell companies throughout the country, but by independent companies; they have adopted the same general standards and methods.

Of course, the public has been benefited by these researches. Not only is that true in this country, but it is true in Europe to a very large extent. To a very large extent they have copied the methods of the American Tel. & Tel. Company. Of course, Europe, for instance, isn't to be compared with the United States, either the Bell or independent, when it comes to giving telephone service. Their methods are so very crude. For instance, in 1912, in Florence, Italy, I saw the telephone exchange there. I saw operators timing toll calls with little hour glasses containing three minutes of sand set along in the switchboard. When the conversation started over the toll lines they turned the hour glass up and were timing toll calls with sand in 1912. It is hard to realize, of course, but conditions there are not the same as they are here. For instance, if you want to put a toll call in from London to Liverpool you make your request for a connection and if you go in the morning you are told your time will come at 3 o'clock in the afternoon and you get your toll connection approximately at that time. Now there is a constant demand from the public for better and better service, and it is
utterly impossible for us to meet this demand as you readily
546 realize unless we get a fair return on the investment. Our
forces are improving in efficiency; our methods are improving, all of which tends to reduce the cost of giving service, as was shown yesterday in the statements which the auditor filed with the Commission. We have brought about this improvement in efficiency in our employes by constant study, constant training. In the old days our people were trained on the job, so to speak; today, we have training schools for our people. For instance, there is a training school where we are training the installers, we call them, who install our instruments. We can install instruments very much faster today than we could a few years ago. We have training school for our operators, where we teach them not only to operate, but we teach them the rules and regulations of the company. We teach them the methods of giving service. We teach them, also, the proper way to deal with the public. We go further, of course, than to train our working forces. We take on every year a number of engineers from the technical schools; for instance, last year we took on 26 or 27 graduate engineers from a university in the immediate vicinity of St. Louis. Those men are in training for the future.

We don't feel for a minute that we have reached the limit of the telephone industry. We don't feel that we have got the highest possible development in apparatus or in efficiency. We believe that these things are coming on continuously. We believe we will have in time a vastly greater development in the telephone industry than we have, so that we are doing all in our power to reduce expenses in order to do our part towards getting a net fair return on our investment. Now, over and above this requirement from the
547 public for a better grade of service, there are municipal requirements upon us which run into a very great deal of money. For instance, recently there was put into effect in the City of St. Louis an ordinance which requires us to move all cables and wires and poles, all overhead construction from two miles of streets

in 1914; three miles of streets in 1915 and four miles of streets for every year after 1915. That is right and proper—it means improvement in the appearance of the city. Anything that helps the city helps the Telephone Company, to be sure. It brings people here, and we want people to come here; but it runs into a vast deal of money. What it is going to cost from now on to clear these streets as required by the ordinance, we have no idea. It may be the street selected may have comparatively few overhead wires on it. It may be the streets selected will have very large pole lines containing not only our local, but our toll line which will have to be taken off. This runs into a vast amount of money, and it must be paid out of our pockets. The city is also making other improvements. For instance, out on Gravois road, from Grand avenue to the City limits it is about four miles. We have to move our pole lines, which is a very large pole line containing cable and wires. We are working on that now. That will cost us about $60,000. It isn't necessary at all from our point of view; the construction is perfectly good construction. It will last for a great many years, but we have to take it down in order to meet the requirements of the city. At Twelfth street, where the railroad tracks are, the city is building a bridge there. We have got to put our wires under-
548 ground. This will cost us about $10,000. The plant is in perfectly good condition and there is no reason, from our point of view, to take those wires and cables down. Those are typical samples of what is happening right along in the way of municipal requirements.

Mr. Harris:

Q. In that connection, isn't there a requirement for payment on gross receipts of the company in St. Louis, also?

A. Yes, sir. Under our franchise we pay the city five per cent of our gross revenues. Then, in addition to that, demands arise from the public and city for improved service and improved condition. As you know, the telephone industry is a business that is subjected to very great hazards. A large part of our plant investment is out of doors; it is exposed to the elements and to fire, etc. Take just the last part of last month, for instance: In the Missouri and Kansas Telephone Company's territory, there was a sleet storm and practically every wire leading out of Kansas City went down, and it cost about $100,000 to restore that service. The same thing happened, you know, in the east and New York City was almost cut off. I understand that will cost New York City, the heavy snow storm they just had, about $300,000. We have had not only sleet storms in St. Louis here, but we have had other things. In 1896 we had a cyclone, which practically wrecked the plant.

We make what you call development studies. That is, we study the history of the city, the past, and we study what we figure will be the future of the city as a whole. We also study the separate
549 districts in the city. We take into consideration whether they are business districts or residence districts. Whether they are built up and whether they are permanent structures.

Whether they are vacant lots or whether they are what you might call temporary structures, or frame structures. We take into account what we consider will be the future of those sections of the city and it is on that basis that we plan our construction. We don't merely build day by day. We have to build for the future. It is very much more economical for us to build for the future requirements than present requirements. It wouldn't pay us, for instance, if we had to take a pole line down from the street and put wires under ground to build a single conduit. It would pay us while we have the street open to lay a number of ducts in that subway, and the number of ducts we lay is determined very largelly by this fundamental study of what we consider the future will be, and the same way on pole lines. If we build a pole line out into a new section of the city we study the conditions. We take into consideration the class of people who will live in that section of the city. Their general financial conditions, whether they can afford to have telephone service, etc., and we plot out the prospective subscribers, and then instead of merely running one or two or three or four wires, as the case may be, as the houses go up in that new section of the city, we put a cable out there with sufficient capacity to take care of the growth for a number of years to come. Of course, these studies, while they are worked out with the very utmost care and are made by engineers whose life work in the telephone industry is making development studies, at the same time we, like every-
550 one else, will err. Our judgment may not be entirely right, but in a vast majority of the cases we find our study is right and that we were justified in the initial additional expenditure to take care of that future growth.

Hearing before the Commission on April 21st, 22nd and 23rd, 1914, in cases Nos. 234 and 235:

H. BLAIR-SMITH, being duly sworn, testified on behalf of the applicant as follows:

Mr. Blair-Smith is the general auditor of the American Telephone and Telegraph Company, located in New York City, New York. He has been engaged in the telephone business for twenty years: in Nashville, Tennessee, with the Cumberland Telephone and Telegraph Company, and in New York City with the American Telephone and Telegraph Company. He started in the telephone business as a clerk in the treasurer's office of the Cumberland Telephone and Telegraph Company at Nashville, Tennessee, in 1894, and held the positions of clerk, general bookkeeper, cashier and auditor of that company. He was auditor of that company from 1899 to 1912 when he was transferred to New York. The Cumberland Telephone and Telegraph Company is one of the associated Bell Companies.

"The stockholders of the Bell system are represented by citizens of every one of the forty-eight states of the United States. They reside also in the District of Columbia, in the Philippine Islands, in Alaska, in Hawaii, and in Porto Rico, and in Canada, and in

practically twelve or fourteen foreign countries. I can't give
551 a general idea of where the bonds are owned, but they are, we believe, as widely distributed as the shares of stock. The average number of shares of stock held by each holder, the average is about fifty-nine shares. A matter of interest, there are 342 stockholders in Missouri holding stock which has a value of nearly $3,000,000.00. It is this system which the centralized general adminstration is attempting to administer and develop, through which to give to the public uniform and universal service."

The American Telephone and Telegraph Company has paid dividends at the rate of 8 per cent per year since 1906. For the year 1906 it paid 7¾ per cent, and for a number of years prior to 1906 it paid 7½ per cent.

The so-called 4½ per cent charge paid to the American Telephone and Telegraph Company is made to all of the Bell associated companies in the United States. There are twenty-three of these companies, three of which are not controlled or owned by the American Telephone and Telegraph Company. These three are the Providence Telephone Company, operating in the State of Rhode Island; Southern New England Telephone Company operating in the State of Connecticut; and Cincinnati and Suburban Telephone Company operating in Cincinnati and vicinity. The American Telephone and Telegraph Company does not own any of the stock of the Providence Telephone Company; owns only 33.21 per cent of the stock of the Southern New England Telephone Company; owns 30 per cent of the stock of the Cincinnati and Suburban Telephone Company. Of the other twenty companies the American Tele-
552 phone and Telegraph Company owns a majority of the stock. Also, there is a small company in Freeport in which the American Telephone and Telegraph Company owns no stock, to which this charge is made. It is also made to the Golden Stock Telephone Company, which simply rents instruments and pays so much per instrument.

During the year 1913 the cost to the American Telephone and Telegraph Company of performing the services represented by the so-called 4½ per cent payment was 90.1 per cent of the amount of money which was received from the associated companies on this account.

553 F. O. HALE, being duly sworn, testified on behalf of the Company as follows, towit:

Mr. Hale is general manager of the Southwestern Bell Telephone Company. Since the last hearing in this case the Southwestern Telegraph & Telephone Company sold its property to the Missouri & Kansas Telephone Company, and the latter company changed its name to the Southwestern Bell Telephone Company. Prior to the time Mr. Hale became general manager of the South-
554 western Bell Telephone Company, he was chief engineer of the Southwestern Bell Telephone System, with which he has

been connected in St. Louis since 1912. He became general manager August 1st, 1916.

As general manager of the Company he is familiar with the services rendered to the Company by the American Telephone & Telegraph Company. These services are many and varied. The American Telephone & Telegraph Company furnishes the Southwestern Bell Telephone Company, without any additional charge, the transmitters, receivers and induction coils used by the Company and takes care of the maintenance and replacement of these transmitters, receivers and induction coils, they, the American Telephone & Telegraph Company, keeping surplus stocks of these instruments which the Southwestern Bell Telephone Company is privileged to draw upon at any time, thereby relieving the latter company of the necessity of making a large investment in these instruments and in keeping a large surplus on hand to meet urgent needs. In addition to this instrument service, the American Company furnishes valuable engineering, financial, legal and patent services. The Southwestern Company does not have to pay anything for patents and devices used in the telephone art and all patent litigation is attended to and paid for by the American Company, thus making it possible for the Southwestern Company to limit its engineering force to men necessary for field work. There is no duplication of engineering work. The American Company has charge of the larger problems, the experimental work necessary to perfect devices, the standardization of equipment, and things of that kind, which are not and cannot
555 very well be done by the Southwestern Company. The Southwestern Company gets the benefit of practically all the work the American Company does. The American Company is recognized as headquarters of telephone engineering throughout the world. Engineers from European and Asiatic countries come to America to consult American Company's engineers in regard to problems before them. The Southwestern Company and other Bell Companies who have the 4½ per cent license contract are free to send their engineers to consult with the American Company's engineers, who put them in touch with everything that is known about practical problems they want to look into and give them such training as they may need without any cost to the Southwestern Company. They also get the benefit of the research work done by the central body of engineers, which is very valuable to them. For instance, when the Southwestern Company first began using cable, only 100 pairs of wires (200 wires) could be put into a 2½-inch cable. As the result of the research work done by the central body of engineers maintained by the American Company now, 1,200 pairs of wires (2,400 wires) can be put into the same cable, which enables the Southwestern Company and other local companies who enjoy the 4½ per cent license contract, to save great sums of money in the cost of cable and in underground construction. This work could not have been done by the Engineering Department of the Southwestern Company, since they haven't time to spend on such matters. "If we had to carry on that sort of work, we would have to hire additional men."

The American Company has standardized telephone equip-
556 ment throughout telephone plants, which has been of great value. The American Company's engineers keep in constant touch with new inventions affecting the telephone business. If these inventions prove to be valuable, the American Company acquires them and the Southwestern Company gets the benefit of them under the 4½ per cent arrangement without additional charge. The Southwestern Company also gets the benefit of any improvements on inventions made in the research department of the American Company as the result of their studies without additional charge. The Southwestern Company also gets the advantage of all general work done on behalf of all telephone companies by the engineering staff of the American Company. Any problems which the Southwestern Company has to be worked out "they will take under advisement and study and work out for us, and in that way we get the benefit of the combined experience of the telephone companies throughout the country. The results of carrying out telephone work through the country are all concentrated and brought together by the American Telephone Company's engineers, and they are available for our use on request on any specific problem that may arise, which very likely has been met somewhere else and the answer may have been worked out. In addition to that, they stand ready at any time to send their engineers out to consider any intricate problem we may have. Right now they have several engineers in St. Louis carrying on development study in connection with the plant."

Money to finance the Southwestern Company is furnished by the American Telephone & Telegraph Company under this 4½ per cent arrangement without any additional charge. Interest on this
557 money is not charged until the Southwestern Company actually makes use of the money. This service is of great value. The Southwestern Company could not have raised the money necessary to extend their plant but for this arrangement, especially since money cannot be obtained in the open market by a company such as the Southwestern Company, which is only paying 3 or 3½ per cent dividends. Certainly this money could not be obtained at par anywhere else.

The legal services furnished by the American Company cover general consultation and legal work, the same as the general consultation in engineering work. The American Company furnishes the Southwestern Company with the Public Service Commission reports throughout the United States, resumés of the cases and decisions of interest to telephone companies. They publish a daily pamphlet outlining Court and Commission decisions and cases of interest to telephone companies. Their legal department is available for consultation at any time.

The Southwestern Company also gets from the American Company the same general type of service in regard to accounting. Their accountants are available for consultation. They handle all matters with the Interstate Commerce Commission and audit the books of the Southwestern Company without charge. "Every well managed concern requires an audit of its books by competent accountants at least

once a year, and they have to pay for it," whereas the Southwestern Company does not.

All these services above outlined and others are included under the 4½ per cent license contract made with the American
558 Telephone & Telegraph Company. Asked if, as general manager of the Southwestern Company, he considered the services furnished by the American Telephone and Telegraph Company, worth the amount paid to it under the 4½ per cent arrangement, he stated:

"I think they are fully worth it and I don't know of any other place we could get them regardless of the value. I don't know of any other place we could get them except under this arrangement."

The transmitters, receivers, induction coils, repeaters, loading coils and other telephone apparatus which is used by the Southwestern Company in St. Louis, could not be used at all but for the 4½ per cent arrangement, since they are patented articles. If they were owned by others than the American Telephone and Telegraph Company, a very high royalty could be exacted, because they are worth it. Companies which do not have the use of loading coils and repeaters are limited in their underground construction and have to maintain open wire construction except for short distances.

Any new invention discovered by the American Telephone and Telegraph Company, or any new invention which they buy from other inventors, would be placed at the disposal of the Southwestern Company without cost or royalties of any kind, and the forces of the Southwestern Company would be taught how to handle and maintain it.

Q. Now, if this 4.5 per cent agreement was terminated at once, say, would you employ more engineers or more executive officers?

A. We would have to employ more engineers and we would
559 have to employ a large number of people and we couldn't begin to get the results we are getting now for the reason that we would not have accessible the results of the experience in all the other cities of the United States. The American Telephone and Telegraph Company, owing to its position, is in touch with all the telephone work throughout the country.

Mr. Frank:

Q. Throughout the world, isn't it.

A. Yes, sir; they keep in touch throughout the world. They are intimately in touch with everything going on in this country. As a matter of fact this country is recognized as headquarters of the telephone industry. That is proven by any number of engineers from Europe and Asia and all over the world coming to study American Telephone and Telegraph Company methods and practices.

Q. And if you give the same service, if you performed the same service for yourself that the American Telephone and Telegraph

Company now performs it would cost you just as much as it now costs the American Telephone and Telegraph Company.

A. And we couldn't perform the same service because we would not be in touch with the same source of experience.

Q. Could you get a staff like that? Would this company be able to sustain a staff like that?

A. Absolutely not.

Q. And suppose, taking the assumption that the counsel has just mentioned of determining this arrangement, what would be the immediate effect with reference to some of your construction in St. Louis, if you were deprived of loading coils and repeater, etc., of the property of the American?

560 A. We are giving certain concessions today we couldn't give at all with commercial transmission if the use of loading coils and repeaters were taken away from us. I don't know what we would have to do. We would have to spend thousands and thousands of dollars in building a different type of plant.

Q. You would have to reconstruct part of your plant in St. Louis in order to take care of that sort of situation?

A. Yes, sir.

Q. And it would be impossible for you by expending a reasonable amount of money to get the resources you are now obtaining?

A. Yes, sir.

Q. And in addition to that you would be thrown on the market and have to borrow your money just like you buy your poles and would have to pay the same price that other purchasers did for it.

A. I would venture to say we couldn't make any extensions to the plant whatever. We couldn't get the money.

E. D. NIMS, being first duly sworn, testified on behalf of the company as follows:

Mr. Nims is first vice-president and treasurer of the Southwestern Bell Telephone Company. Prior to the formation of the Southwestern Bell Telephone System in 1912 he was vice-president of the Missouri & Kansas Telephone Company at Kansas City, and prior to that time he was president of the Pioneer Telephone Company in Oklahoma. He was with the Pioneer Company since it was organized in 1892. He has been in the telephone business altogether since 1889. He first started out in the independent field, and was with the independent companies in Oklahoma for about five

561 years. His experience has been largely with financing telephone properties.

Mr. Nims is familiar with the license contract between the Southwestern Bell Telephone Company and the American Telephone & Telegraph Company, under which 4½ per cent of certain gross revenues are paid to the American Telephone & Telegraph Company. He considers the financial aid given by the American Company the most important and valuable service received under the 4½ per cent arrangement. "It is my experience that it is exceedingly difficult to finance telephone companies in this western country

especially. In fact, it would have been impossible to have done so without the aid and assistance of the American Telephone & Telegraph Company to any such extent as it has been developed," especially since the Southwestern Company has paid very small dividends, 3 or 4 per cent. If it had been independent of the American Telephone & Telegraph Company and had had no connection with that company financially, the difficulties that would have been encountered in attempting to obtain new money in the market would have been almost insurmountable. "If it had been possible to have obtained money at all it would have cost a very large amount, more than we had to pay for it." The Southwestern Company for temporary financing as a rule has paid 6 per cent. Money has been obtained as low as 4½ per cent on notes guaranteed by the American Telephone & Telegraph Company. He knows the difficulties met by nearly all the telephone companies in this territory in attempting to finance their properties. They paid very much more for their money than the Southwestern did. "In fact, I don't know of any one
562 of them that have been financed on a basis that would be at all comparable." Without this connection with the American Company, all the Southwestern Company's financing would have to be done in competition with industrial concerns all over the country that make very much larger percentages than any telephone properties are earning.

Q. The evidence in this case shows that the plant account of the Bell Telephone Company along in the years 1900 and 1901 was pretty close to two million dollars for the eastern half of Missouri, and at 1913 was eleven million, seven hundred thousand, or an addition of nearly ten million dollars in a period of about twelve years, averaging almost a million dollars a year. If you had been running that company during all of those years and had been making low rates of dividends, or paying low rates of dividends, would you have had the same difficulties you have just mentioned in getting money?

A. Yes, I think probably it would have been impossible to have got the money on the showing that was made by the company.

Q. Part of your money would have had to be gotten in the form of stocks and part in the form of bonds, would it not?

A. Yes. I don't believe it would have been possible to have sold stock on that basis.

Q. Then from your experience in handling independent properties and your experience as Vice-President and Treasurer of the Company you think the amount that is paid out is a large part of it justified by the financial benefits obtained from the American Telephone and Telegraph Company, do you?

A. I do. I think that the financing of the so-called independent telephone companies, large and small—their failure to make
563 a success has been largely on account of the financing.

Q. The testimony in this case is that there has been about $116,000.00 paid under the license contract agreement for the test period, a portion of that being instrument service and the other portion for other services which have been detailed, among them

financial. Your opinion is that it is well worth while, from a financial standpoint?

A. I think one transaction in that time would more than absorb the total amount. This Commission is familiar with that—the financing of the floating debt of the company, even over a two-year period.

Q. You know, of course, that The Southwestern Telegraph and Telephone Company, and the Southwestern Bell Telephone Company now, received a great many other advantages out of this contract than those financial arrangements?

A. I do.

Q. As Vice-President of the company, with your business experience, if you didn't have those arrangements, knowing the benefits that accrue under the license contract, would you think it would be a wise business method on your part to advise the Board of Directors to enter into this contract with the American Telephone and Telegraph Company, if you didn't have the contract already?

A. I would. At the time that the company in Oklahoma—the independent company—was negotiating with the Bell Company for a business co-operation, I studied this problem very thoroughly, and my conclusions were these: In the first place, I found out that there was no duplication of service. It is true that the companies had to maintain independent accounting, engineering and legal
564 departments. At the same time the service that we received from the A. T. & T. was in no way a duplication of that work. Had we not had this arrangement with the A. T. & T. we would have been obliged to have maintained much more expensive departments, and would not have been able for the amount we could afford to pay to have had anything near as efficient as we had in paying the pro-rata of the other. My investigation showed that this service not being in duplication had to be paid for; and that the total amount paid for this service by both companies was not in excess; and that the test to my mind was that the A. T. & T. owning all our stock and receiving all our income, did not receive or pay out in the end an excessive amount, any more than it would have actually cost to have done the work. By that reason the public was not paying one dollar more than they would have paid if it had been one company. That, to me, was the test of the reasonableness of it, and that it was a good business arrangement.

Q. At any rate, considered from the standpoint of the Southwestern Bell Telephone Company, it is a relation that is almost indispensable at this time, isn't it?

A. It is absolutely indispensable if we are to furnish the comprehensive service we are furnishing now. Take conditions like the present crisis. We would have been absolutely unable to have met them without the help and assistance of the American Telephone and Telegraph Company.

Q. At any rate, Mr. Nims, if you had had charge of the company as its financial adviser from the time it grew from two million dollars plant account to approximately twelve millions, a first mortgage in

the beginning wouldn't have done you very much good
565 towards financing as it grew, would it?

A. I think not.

Q. There over a period of twelve years the plant was made six times greater than it was at the start which would mean it would have to be refinanced several times?

A. Yes. That, in my opinion, is a very great advantage in financing the way we did. If we were obliged to finance with bonds we would have had to have refinanced so many times, and would have had to pay a commission each time, and probably a premium for taking the bonds; so that I think the amount of money that has been saved in that item alone would be a very large amount.

F. L. RHODES, being first duly sworn, testified on behalf of the Company as follows:

Mr. Rhodes is a graduate of the Massachusetts Institute of Technology of the Class of 1892 with the degree of Bachelor of Science and Electrical Engineering. Immediately after graduating he entered the employ of the American Bell Telephone Company running a wire-testing machine in the experimental shop. Since that time he has been continuously in the employ of the American Bell Telephone Company and its successor the American Telephone & Telegraph Company in the engineering departments of those companies. His experience has covered various portions of the telephone plant, including underground conduits, underground and aerial cables, toll lines, and other appurtenances of wires, engineering all buildings, central office equipment and sub-station equipment. His early work was for a number of years as assistant to experienced men in
566 those various lines of engineering work. During his entire connection with the American Bell Telephone Company, and its successor, the American Telephone & Telegraph Company, he has inspected and become familiar with the telephone plants and their construction in many parts of the United States. In 1905 he was appointed in charge of a section of the engineering department of the headquarters organization of the American Telephone & Telegraph Company "having to do with the development and standardization of engineering practice covering the outside plant of the Bell System. By outside plant we mean the operation of the plant between the subscriber stations and the central office.". In 1909 he was appointed outside plant engineer and became responsible for the development and standardization of all materials and methods used in the outside plant of the Bell System, "that is, covering the preparation of specifications describing in full detail the requirements to be met to insure the best results. This covered a vast amount of study and research, experimental trials and tests both of a chemical and physical nature, and also service trials. The work has covered the development and standardization of plant construction and to some extent of maintenance. It has covered important improvements in the designing, construction and efficiency of cables and a large amount of work on economic basis of designing the outside plant; also the relation of telephone wires with high tension

wires during all that period, which has involved a constant examination of new ideas and patents relating to this portion of the work."

567 I am a Fellow of the American Institute of Electrical Engineers, and a member of its Board of Examiners. I have served as Chairman of its Telegraphy and Telephony Committee. I have served on the Committee of Railroad Telegraph Superintendents' Association for the standardization of methods of construction for telephone lines over railroads. I have served for two years on the Committee of overhead line construction of the National Electrical Light Association, dealing with the standardization of methods of joint use of pole lines by electric light wires and telephone wires, dealing with crossings of those wires; and I am now a member of the National Committee on Overhead and Underground Line Construction, and Chairman of one of its sections; and a member of the Committee co-operating with the National Bureau of Standards for the formulation of safety rules; a member of the American Electrolysis Committee; a member of the State Committee of the American Fire Protection Association, dealing with construction methods; Chairman of the Telephony Committee co-operating with the Division of Valuation of the Interstate Commerce Commission, formulating methods for inventorying telephone properties.

Q. Will you outline briefly the character of services that are performed for the Southwestern Telegraph and Telephone Company and the Southwestern Bell Telephone Company as it is now known by the General Staff of the American Telephone and Telegraph Company?

A. These services are furnished under a license contract in existence since 1881. The services are continuous and continuing, and have been so from the beginning of the business. They cover

569 those services which have been referred to by previous witnesses, consisting of the services rendered by the general administrative officials of the American Company, by the Engineering Department, and various other departments that have been mentioned, and in addition to those services rendered directly by those departments are those which the Southwestern Company receives as a consequence of the relationship which the American Company has established between all these different departments in the headquarters organization and the corresponding departments in the associated companies, and in the Western Electric Company, which does the manufacturing. The engineering services and the relationships which I have just referred to, and particularly those of the Western Electric Company, I should like to describe more fully later on. In addition to those services are the instrument services, consisting of the furnishing of telephone instruments to the associated companies, including the Southwestern Company, and the developing and improving of these instruments, and the transmission of speech thereby.

Witness has prepared a chart outlining the nature and scope of the services furnished by the American Telephone & Telegraph Company under the 4½ per cent license contract arrangement to the

various Bell companies, which was introduced in evidence as Rhodes Exhibit 1, and is as follows:

(Here follows chart, Rhodes Exhibit 1, marked page 568.)

570 The purpose of this diagram is to show conveniently at a glance what might be called a birdseye view of this service under the license contract

In the upper right-hand corner of this sheet I have outlined the instrument service which I last referred to. The balance of the sheet contains a presentation of the general nature of the services outside of the furnishing of instruments.

At the upper left-hand portion of the sheet is a brief statement of the services rendered by the Executive and Treasurer's Department of the American Company, consisting of assistance in raising funds for plant extensions.

Immediately at the right of that is a line leading to the bottom of the sheet, which covers a general presentation of the ramifications of the Engineering Department, and, inasmuch as I would like, with the permission of the Commission, to go into that more in detail later, why, I won't refer to that at this time unless you wish me to.

Q. That is all right.

A. The next stem at the right outlines the functions of the Insurance Department of the American Company, which co-operates with the Engineering Department. This insurance company deals with recommendations——

Q. Is that an insurance company?

A. It is a branch of the staff.

Q. You said insurance "company." You mean Insurance "Department"?

A. Yes, sir. It is not an insurance company. It is a branch of the general staff dealing with these insurance matters, making recomendations to the associated companies in regard to standard types of buildings to promote safety and reduce fire risks,

571 establishing standards for inspection and maintenance of buildings with reference to the fire hazard, and making for the associated companies periodical inspections of the buildings. It has also assisted the associated companies by establishing standard forms of fire insurance policies. It also handles the matter of insurance rates and adjustment of losses.

The next section at the right outlines the functions of the Accounting Department, including what has already been testified to as auditing the accounts of the associated companies, in addition to which a large amount of statistical advice pertaining to the telephone business, both in this country and in foreign countries, is given. Representatives of this department make frequent visits to the accounting officials of the associated companies and the accounting officials of the associated companies frequently visit the headquarters organization to acquire information.

Another large branch of this work deals with accounting standardization, the development and maintaining of uniform accounting methods and conferences with the Interstate Commerce Commission and other commissions, and there was a question asked this morning that perhaps I could clear up in that connection as to just what this work specifically consists in.

At the time that the Interstate Commerce Commission decided to standardize telephone accounts they had very clearly in mind the nature of the standardization which they wished to establish, but they were not, naturally, familiar with the telephone business, so they called on representatives of our Accounting Depart-
572 ment to confer with them in Washington, and those conferences occurred periodically for a period, I think, of nearly two years. Our accounting people there represented all of the Accounting Departments of the Bell System, and the purpose of those conferences was for the Interstate Commerce officials to tell our accounting representatives what it was they wished to accomplish in this standardization of accounts, and our people said: "Now, we can help you in the way of applying this to the telephone business so that these accounts, when they are set up, will give you what you want." In other words, our people translated into the language of the telephone business what the accounting representatives of the Interstate Commerce Commission sought to accomplish and, if that had not been done, I see no other course that would have been possible than for all of the associated companies all around the country to have sent their representatives to Washington and have dealt with that individually. This is done for the system as a whole.

Q. That is being done all the time?

A. Yes, sir. There are conferences going on at very frequent intervals all the time as questions of interpretation come up.

Q. The Interstate Commerce Commission prefers to take it up with the Bell System as a whole to having to take it up with twenty or thirty different companies?

A. They have told us so; yes, sir.

The next section of this exhibit deals broadly with the functions of the Legal Department, including expert advice as to all questions arising in connection with the business based on a compre-
573 hensive knowledge and experience with the entire system. It also includes the advance compilation and distribution of reports on all Commission decisions.

In addition to that, bulletins are furnished of court cases of interest to the associated companies and distribution of comparative compilations of all statutes affecting telephone companies, and in general the collection, analysis and distribution of information of general interest and value to the Legal Departments of the associated companies.

There is another broad function of the Legal Department, in close co-operation with the Engineering Department, dealing with the question of patents, but that is rather a larger matter, which, with your permission, I will take up later.

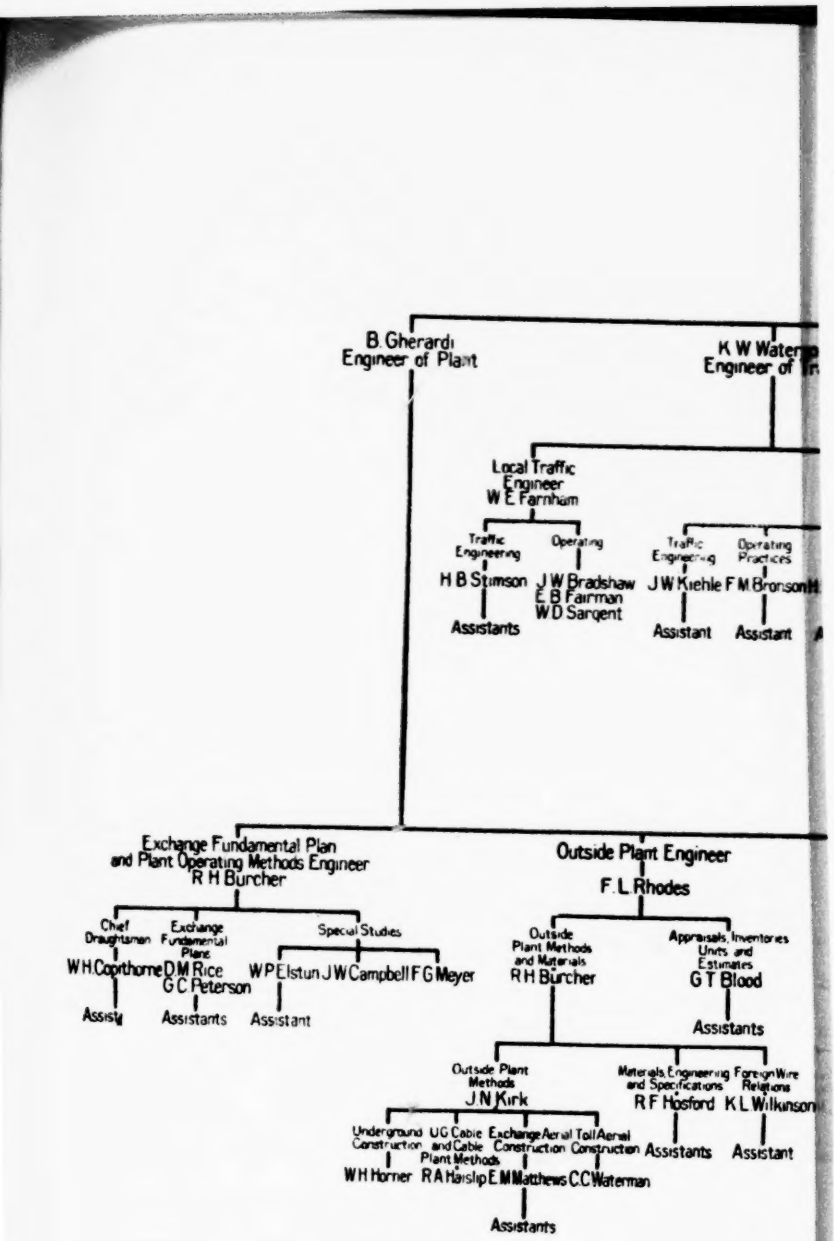
Q. Now you have gone in a general way the high points of the service rendered. How do you understand that this service by the American Telephone Company for associated companies originated?

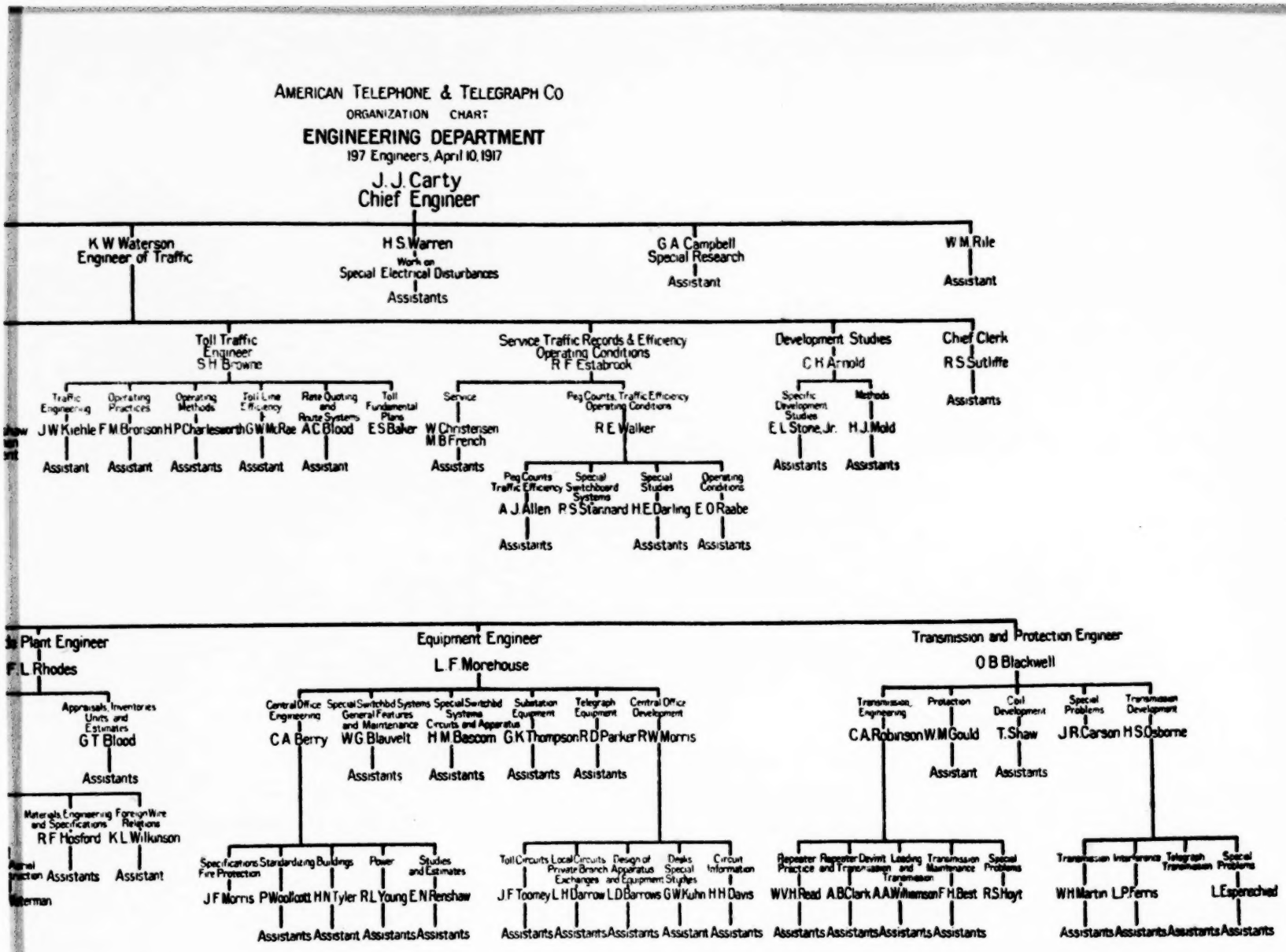
A. It has been a matter of natural evolution growing out of the character of the business. The plan was adopted because it was essential if the telephone service was to be made of the most value to the public. At the beginning of this business there was nothing but the original form of telephone receiver devised by Professor Bell. That was all there was to the telephone art. If, when the right to use the original Bell instrument was granted in St. Louis, and likewise granted over the United States, if at that time the American Company had sat back and merely received the license fees and told each of the companies to develop the art by themselves, there is no question in my mind but what the result would have been failure
574 and chaos. The companies, from the beginning, naturally came to the American Company for assistance and the American Company naturally furnished it. There was nothing artificial about the arrangement. As the art grew the headquarters organization furnishing this information grew with it, and as far as I can see it must continue to grow until the telephone art has reached the end of its development, which, from all the indications at the present time, is a long way off.

The furnishing of this service by this general headquarters organization has undoubtedly been the best and the most efficient and the most economical way of making the Bell invention the most useful to the public.

Mr. Rhodes has prepared a diagram describing the engineering department of the general organization, which was introduced in evidence as Rhodes' Exhibit 2, and is as follows:

(Here follows chart, Rhodes Exhibit 2, marked page 575.)


B. Gherardi
Engineer of Plant
K. W. Waterm
Engineer of Tr
Local Traffic
Engineer
W. E. Farnham
Traffic
Engineering
Operating
H. B. Stimson
J. W. Bradshaw
E. B. Fairman
W. D. Sargent
Assistants
Traffic
Engineering
Operating
Practices
J. W. Kiehle
F. M. Bronson
Assistant
Assistant
Exchange Fundamental Plan
and Plant Operating Methods Engineer
R. H. Burcher
Chief
Draughtsman
Exchange
Fundamental
Plans
Special Studies
W. H. Copthorne
D. M. Rice
G. C. Peterson
W. P. Elstun
J. W. Campbell
F. G. Meyer
Assistants
Assistant
Outside Plant Engineer
F. L. Rhodes
Outside
Plant Methods
and Materials
R. H. Burcher
Appraisals, Inventories
Units and
Estimates
G. T. Blood
Assistants
Outside Plant
Methods
J. N. Kirk
Materials, Engineering
and Specifications
Foreign Wire
Relations
R. F. Hosford
K. L. Wilkinson
Underground
Construction
UG Cable
and Cable
Plant Methods
Exchange Aerial
Construction
Toll Aerial
Construction
Assistants
Assistant
W. H. Horner
R. A. Harslip
E. M. Matthews
C. C. Waterman
Assistants


AMERICAN TELEPHONE & TELEGRAPH CO
ORGANIZATION CHART
ENGINEERING DEPARTMENT
197 Engineers, April 10, 1917
J. J. Carty
Chief Engineer
K W Waterson
Engineer of Traffic
H S Warren
Work on
Special Electrical Disturbances
Assistants
G A Campbell
Special Research
Assistant
W M Rile
Assistant
Toll Traffic
Engineer
S H Browne
Traffic Engineering
J W Kiehle
Assistant
Operating Practices
F M Bronson
Assistant
Operating Methods
H P Charlesworth
Assistants
Toll Line Efficiency
G W McRae
Assistant
Rate Quoting and Route Systems
A C Blood
Assistant
Toll Fundamental Plans
E S Baker
Service Traffic Records & Efficiency
Operating Conditions
R F Estabrook
Service
W Christensen
M B French
Assistants
Peg Counts, Traffic Efficiency Operating Conditions
R E Walker
Peg Counts Traffic Efficiency
A J Allen
Assistants
Special Switchboard Systems
R S Stannard
Special Studies
H E Darling
Assistants
Operating Conditions
E O Raabe
Assistants
Development Studies
C K Arnold
Specific Development Studies
E L Stone, Jr.
Assistants
Methods
H J Mold
Assistants
Chief Clerk
R S Sutliffe
Assistants
Plant Engineer
F L Rhodes
Appraisals, Inventories Units and Estimates
G T Blood
Assistants
Materials Engineering and Specifications
R F Hosford
Assistants
Foreign Wire Relations
K L Wilkinson
Assistant
Equipment Engineer
L F Morehouse
Central Office Engineering
C A Berry
Special Switchbd Systems General Features and Maintenance
W G Blauvelt
Assistants
Special Switchbd Systems Circuits and Apparatus
H M Beecom
Assistants
Substation Equipment
G K Thompson
Assistants
Telegraph Equipment
R D Parker
Assistants
Central Office Development
R W Morris
Specifications Standardizing Buildings Fire Protection
J F Morris
Assistants
Power
P Woollcott
Assistant
Studies and Estimates
H N Tyler
R L Young
E N Renshaw
Assistants
Toll Circuits
J F Tooney
Assistants
Local Circuits Private Branch Exchanges
L H Darrow
Assistants
Design of Apparatus and Equipment
L D Barrows
Assistants
Desks Special Studies
G W Kuhn
Assistant
Circuit Information
H H Davis
Assistants
Transmission and Protection Engineer
O B Blackwell
Transmission Engineering
C A Robinson
Protection
W M Gould
Assistant
Coil Development
T. Shaw
Assistants
Special Problems
J R Carson
Transmission Development
H S Osborne
Repeater Practice
W V H Read
Assistants
Repeater Development and Transmission
A B Clark
Assistants
Loading and Transmission
A A Williamson
Assistants
Transmission Maintenance
F H Best
Assistants
Special Problems
R S Hoyt
Assistants
Transmission Interference
W H Martin
Assistants
Telegraph Transmission
L P Ferris
Assistants
Special Problems
L Espenschied
Assistants

The engineering department is, broadly, divided into two portions, one under the Engineer of Plant and the other under the Engineer of Traffic. In addition to that there is a special section dealing with electrical disturbances, and another very small subdivision dealing with certain matter with special research.

Broadly, the plant department is divided into sections dealing with the outside plant, with central office equipment and sub-station equipment; another branch dealing with problems connected with the efficiency of the transmission of speech and with the electrical protection of the telephone plant. Another section of the plant
576 department deals with what we term Exchange Fundamental plans, which I will endeavor to explain a little later on, and with plant operating methods.

Similarly, the section dealing with Traffic Engineering is subdivided, but as my colleague, Mr. Estabrook, is out here and is a traffic engineer, and better qualified to discuss that than I am, I will refrain from going into it now.

As to the size and scope of this department, in April of this year the engineering department consisted of 337 people, of whom 197 were engineers, the balance were draftsmen, map workers and the stenographic and clerical force.

The engineers of this general staff are not only highly experienced specialists in all branches of telephone engineering work, but nearly every man is a graduate of one or more of the important American Universities, colleges or technical schools of recognized engineering and scientific standing, and there are 49 of such colleges or universities represented in this general engineering staff. In addition numerous members of the department hold advanced degrees and some have studied at foreign universities. These colleges cover the entire United States. Specifically, I have in my own section of the department a man from Washington University in St. Louis, Mr. Morehouse, who is at the head of the equipment engineering, was at one time on the teaching staff at Washington University. Another member of the department came from Drury college, which I think is at Springfield, Missouri, and we have other men from the University of Nebraska and from the Kansas State Agricultural College.

Our general engineering staff from time to time retains in
577 an advisory capacity outside experts who are skilled in special materials, processes or practices, wherever their service will be of assistance in the work which we are doing for the associated companies. To give an illustration of that, at the beginning of the present war we found ourselves confronted by what promised to be a very serious problem in continuing the supply of paper of the kind that we used for insulating the wires in our cables. This paper is made from old manila rope stock, new material doesn't meet the requirements. A large proportion of that rope stock previous to the war was obtained from the maritime cities of Europe and the outbreak of the war has seriously interfered with the supply of that material. It became necessary for us at once to start on a rather broad campaign toward changing our methods of manufacture to

conserve the available supply of this paper, and also to undertake a series of investigations as to what might be done in the way of substitutes for the kind of paper which we had heretofore been using. In connection with laying out that work of this broad series of experiments with alternative materials we retained Doctor Arthur Little, who is probably the greatest paper expert in the country, and we have utilized his advice in a number of prospective changes we have been contemplating in this supply of paper.

That case is interesting to me, because it is illustrative of the class of work we frequently do that the associated companies don't know anything about, not even that it is going on, unless they happen to inquire about it. We met this situation at the very earliest
578 possible moment in order that their supply of cable might not be interrupted.

In other branches of our work we have had the advice of Doctor Hermann Von Schrenk of St. Louis, who is an expert on timber preservation and there has been a great many people retained by the staff. Mr. Thomas A. Edison was for many years retained by the staff.

I should like to call attention to the fact that by concentrating the work on the engineering problems of the Bell System in this headquarters organization we are enabled to have specialists in every branch of the work. No one of the associated companies by itself could possibly have enough work coming up within one specialist's province to keep him reasonably busy, whereas by consolidating that work for the entire system in the headquarters organization and bringing all problems of that variety and kind to the general engineering staff there is enough work of that kind so that the staff is enabled to have a trained specialist on every technical point in the business whose duty it is to conduct investigations and research and to know the latest word in his specialty and to have this information available on call for the benefit of the associated companies, and these men on the general staff are going around the country whenever an associated company calls for them in connection with some one of its special problems to give them the best advice possible on the subject that he is an expert in.

The general engineering staff has complete technical files and records from the invention of the telephone to the present date. These are most valuable and are in constant use in our work
579 for the Southwestern Company and the other associated companies. They represent the accumulated telephone experience of the world, and I know of no other collection of telephone data in any way comparable with them. Not only do they include all the records of the work of the general staff itself, but complete files of all telephone patents and all important technical scientific periodicals and other publications both in the United States and abroad, including proceedings of technical societies and congresses. Now this material is not merely received and filed away. Each copy of the proceedings of a scientific society, each periodical and every new patent pertaining to the telephone business is carefully examined on its receipt by a specialist in order that the engineering information

that it may contain will be immediately known to the central engineering department and become available in the service that we are rendering to the Southwestern Company and the other associated companies.

General engineering and scientific discoveries, both in this country and abroad, are carefully studied by the general engineering staff and where containing possibility of improvements in the telephone plant or service the new ideas are thoroughly tested and the results are made available to the Southwestern Company and the other associated companies. The general engineering staff is in a peculiarly favorable position to obtain from abroad under normal conditions information of all kinds pertaining to the telephone art on account of the cordial relations which it has maintaied with the telephone administrations of foreign governments and also because of its relations with the Western Electric Company, which
580 as technical representatives in most of the important cities of Europe and other parts of the world. Reports on matters which may be of interest to the associated companies are periodically received from the engineers at these places. Representatives of our general engineering staff are also sent abroad from time to time to make special investigations and to attend technical conferences and meetings of foreign telephone officials. These are some of the means by which the general engineering staff is enabled to keep in complete touch with all foreign developments that may be of interest or value to the associated companies. It is only fair to say, of course, at the present time that these foreign relationships are considerably interfered with by the war.

Q. Will you classify broadly the services of a general engineering staff to the associated companies, and to the Southwestern Company in Missouri, particularly by the general engineering staff?

A. The various services may be divided broadly into two classes. In the first I would place work upon problems for all of the associated companies, in the benefits of which the Southwestern Company participates. This work is largely undertaken at the initiative of the general engineering staff and not upon specific request from the associated companies. In some cases, however, the work is undertaken at the request of one of the associated companies or as the result of difficulties experienced by one of them, but in that case the problem is worked out broadly for the conditions obtaining in each and all of the associated companies.

In the second class I would place the specific work that is done for each associated company, including the Southwestern Com-
581 pany. This work is largely undertaken at the request of the engineer or sometimes some other official of the Southwestern Company, although from time to time we initiate specific problems and take those up with the officials of the Southwestern Company. A complete list of all of these problems which the General Engineering staff has worked out or now has on hand would fill a great many volumes, but later on, if you desire, under each classification I will give you a few examples which will illustrate the character of the service rendered and in some cases where the

nature of the work will admit of it I will undertake to give definite figures indicating the value of this service to the Southwestern Company.

In order to properly appreciate the significance and proportion of these figures, I think they will have to be considered in relation to the construction, operating and maintenance expenses of the Southwestern Company into which they pertain. The book value of the plant of the Southwestern Company at the end of 1912 was approximately $11,700,000, the new construction added in 1913 was in excess of $1,200,000 and the total expenses of 1913, of which operating and maintenance constitute the larger part, were in excess of $2,500,000. I mention these figures because I think it makes it clear that a substantial saving in any one of the units which enter into this construction, operating and maintenance expense will amount to a large sum, and unless we have an appreciation of the total expenditures of this nature we are not in a position to judge of the reasonableness of the savings which have been accomplished in these portions of the business. From their nature many of the most valuable services rendered by this General Staff to the Southwest-
582 ern Company are incapable of definite pecuniary valuation. As an example of that I might mention improved operating methods which enable the Southwestern Company to give the public a speedier and more accurate service than could previously be given to subscribers. That, although of great importance, is a matter which I know no way of definitely evaluating it. Similarly, no one can definitely appraise the value of what the General Staff has done in the development of metallic circuits, transposition systems, twisted pair construction, without which the extensive telephone development throughout the Southwest and the rest of the United States would not—could not have taken place. Now even in these cases where I have made a definite estimate of the savings accomplished through this work there is room for the exercise of judgment. Estimates of that kind are of such a nature that I believe that two engineers, each competent and fair-minded, might perhaps arrive at different results, but I do believe that their results could not fail to be in general agreement as to their order of magnitude. I will later on give some of these definite figures as to savings, not as the sole and principal means of enabling the Commission to judge of the value of these services, but rather to furnish convenient illustrations of the value, and I am satisfied that for this purpose they are trustworthy and as accurate as can be made.

Although the total savings from the work of the general staff, which I will describe and illustrate, are real and accrue from year to year and in total are larger than any of the figures which I shall give, it is in most cases impossible to trace these in the books of the Southwestern Company or, in fact, any other company for
583 the reason that so often the result has appeared in the form of improved service without corresponding increase in investment or expenses or in telephone rates.

I think that is well illustrated in the case of the definite saving

that we have made from improvements in the sheaths of cables. I will go into that more later, but the point of that, in answer to your question, I think, is this: that an examination of the books would show that in some cases cables have actually cost considerably more since this improvement was made than they had before. Now the answer to that is the large increase that has taken place in the cost of the raw materials entering into the sheaths of these cables and the effect of the improvement which we made, which reduced the cost of these sheaths at the time some 8 per cent of the total cost of the cable, the effect of that improvement has been to prevent the total costs from rising as high as they otherwise would have done with this increased price of raw material.

Now, in giving these savings from the work done by the Staff I do not wish to give the impression that the payment made by the Southwestern Company under the license contract is in any respect royalty or a tribute which is based on these past achievements. This service rendered by the General Engineering Staff is a present and continuing one, and vastly important work for the further benefit of the associated companies, in which the Southwestern Company will share, is now in progress and will be realized in the future. We have work on hand that will come to a completion perhaps two or three or five years from now, but it is all work that is tending, in the progress of the business, toward enabling things to be
584 done better and cheaper than has been the case in the past.

I will mention these past achievements, however, as tangible illustrations of the proven capabilities of this Staff in producing benefits for the associated companies, and I think the best way that you could form an impression of what the future holds is to judge what we have done in the past, and to know that it is continuing and the activity of the General Staff and its size is greater now than at any time since I have been connected with the business.

Q. Has the General Staff heard anything about the high cost of living? Has that reached as far as New York?

A. It certainly has, Mr. Frank.

Q. What have you done to meet it?

A. On behalf of the Southwestern Company and the other associated companies our energies have been directed very seriously to this problem. The result is, up to the present at least, that while the costs of labor and raw materials and commodities in general have been growing higher and higher that telephone rates have not increased in proportion. We think that this work that we have done in making economies available to the associated companies is a real work of great value, because it has been accomplished without restricting or impairing the service that we are giving, or without cutting wages. On the contrary these results have been obtained at the same time that we have provided in the face of increased wages and greater expenditures of all kinds a greatly enlarged plant and more efficient and extended an amplified service. This matter of providing adequately for the wages of our employes is of the highest

importance in the telephone business, because this business
585 requires employes of a high order of intelligence and training in order that we may successfully discharge our obligation of serving the public satisfactorily and efficiently.

Q. You spoke just now of manufacturing paper by using a substitute for the paper you have been using, and that that was not called to the attention *to* the associated companies. Is there very much of this kind of work done that is not called to the attention of the associated companies?

A. Yes, sir; there is a very considerable amount of it. There are many things of great importance going on in our development work which the associated companies do not know of now, and there is some work we are doing now they will never be advised of unless they ask for information about it. I will illustrate that in just a minute.

A. The first class of these things, or work, that is being done that they do not know of until completion is illustrated by such achievements as transcontinental telephony and wireless telephony. These two things came to the attention of the associated companies and the public substantially at the same time, and they represented the results of work of years that was being done by the staff for the entire system. There are problems of that kind that are under way now.

A. Now, as to the second class of development work, that is illustrated by the very great number of pieces of apparatus, methods and things that are brought to us that we try out and are abandoned because they are not of real value. Now the value of that service to the associated companies, the value of the mistakes, of avoiding mistakes, the mistakes which the associated companies do not
586 make, is undoubtedly very great in comparison with the value of the things they can see and definitely attempt to measure.

Q. In other words, you don't tell them about the mistakes that you make or the things that are offered to you that would be of no value?

A. They get that information in this way: We recommend to them the things which we have satisfied ourselves by trial and experience are right, and if they are considering the use of any new material or method all that an associated company has to do is to get into communication with the General Staff and find out if we have investigated that and if so what our recommendations are, and if we have not already investigated it we do investigate it to see if there is in it anything that is of value. Now, as far as I know, there has in the whole history of this General Engineering Staff never been anything approved as standard for the use of the associated companies that has subsequently been abandoned for something that was known beforehand. Of course, a great deal that we have recommended has been abandoned within a comparatively short time on account of improvements that have been made since, but never has anything of my knowledge been abandoned because there was something already in existence that we had failed to know about.

Now, it seems to me that a service of this kind would be of enormous value to engineers in other lines of work, who would not have to experiment on their own account. If they had some organization to tell them and advise them as to what is best to do whenever they are confronted with a new problem.

587 Q. What is the relation—explain a little more fully—between the engineers of the general organization and the engineers of our organization in the Southwestern Bell Telephone Company?

A. The engineers of the general staff are in constant touch and communication with the engineers of the associated companies in the field, but there is no duplication of work. The general staff is developing and standardizing; the engineers in the field are constructing, operating and maintaining. The difference is something like that that exists in the army, where the field officers are concerned with where to place the gun and when to fire them and what to fire at, but they don't have to worry about the design of the gun or the ammunition or whether the ammunition is of the right caliber to fit the gun. It is the same with the staff. It is always in touch with the field and fully utilizing the experience gained in the field. Now, as a result of this, instead of having, in addition to the present field engineering forces, a large number of consulting engineering departments scattered around the country and each attempting to do what this general engineering staff does, we have this one Consulting Engineering Department, which, it is truthful to say, is the most efficient of its kind in the world. It does the consulting engineering and the experimental work for the entire system. Each associated company or group of associated companies does for itself its field or operating engineering.

Now, it is no reflection on the field engineer who has specialized in his work that he is not an expert in these matters of development and standardization any more than it is a reflection on a lawyer that he is not an expert in criminal law or patent law. Each body of men is expert in its own sphere and profession.

588 Now, this general staff is not a permanently segregated body of men by any means. We select from the engineers in the field from time to time men who have had great practical experience and good training and bring them into the staff, men from the general engineering staff go out into the field, and in that way there is a constant flow of new blood back and forth between the field and the staff.

Q. In that way you have the practical man at headquarters and the theoretical man out in the field and vice versa and get the benefit of the field work at the headquarters and of the headquarters work in the field?

A. Yes, sir. Of course, in addition to that, there are continually conferences going on all the time as a matter of our regular work between the field engineers and the engineers of the staff. The men from the staff go out into the field and men from the field come in to the staff for consultation sometimes for weeks at a time.

Q. Well, the testimony in this case shows that the Southwestern

Telephone & Telegraph Company has a president and some vice-presidents and some attorneys and some engineers and some accountants and several stenographers and clerks and little things like that. Are any of those officers that I have mentioned duplicating the work done by the general staff in New York?

A. No, sir; it is a different kind of work.

Q. It is an entirely different kind of work?

A. Yes, sir.

Q. How does the general engineering staff make known the results of its work to the associated companies?

A. There are several methods employed for that purpose.

589 Some get the information by means of bulletins, others by circular letters. Upwards of seven hundred and fifty circular letters have been issued by the general staff to the associated companies. Frequently by means of direct or special letters. In the case of other portions of the work, by specifications, of which there are now nearly four thousand. That is, current numbers up to 4,000. A great many of the olders ones are obsolete and have been replaced. By many thousands of drawings. By frequent conferences, the staff engineers going into the field, and the field engineers coming to the staff. A large amount of information comes to the associated companies in the form of improved apparatus which the staff develops for the associated companies and notifies them of these improvements and, in addition, a large amount of consulting engineering is done in answer to specific requests for information from the associated companies, solving specific problems put up by the associated companies to the general staff.

Q. Would you say that the functions of the general staff were those of a clearing house?

A. No, I do not think that is an apt term. The term clearing house implies to me a collecting and assorting and distributing function in a routine way. The functions of the headquarters staff are vastly broader than that. It contributes brains and work to all the problems it takes up. There is practically nothing of a routine nature that is done by the headquarters engineering organization.

Q. That is, practically all the work that is done by the headquarters organization is the investigation of real problems connected with the telephone art?

A. I should say so. Yes.

590 Q. What do you mean by routine? What is routine work?

A. Why, that would imply to me the collecting of statistical information, tabulating and averaging the figures and sending them out.

Q. The work that is being done, then, is to make further advances in the art?

A. Yes.

Q. The art is not complete yet, by any means, is it?

A. No; advances are going on fully as rapidly as at any time since my connection with the business, and they are broadening out all the time. We can't see the end.

Q. So far as the future is concerned, it looks like there will be more work in the future than there has been in the past?

A. Yes. That is illustrated by the fact that the department has been increasing right along in size and the number of problems.

Q. Is the department greater now than it has ever been before?

A. Yes.

Q. This relation that exists between the general engineering staff and the engineers of the associated companies described by you—does that carry with it the enforcing of your ideas upon the engineers of the associated companies?

A. No, it does not. There is no domination or forcing of use. The information and the recommended practices, with the reasons for these recommendations, are sent out by us to the associated companies and are almost invariably followed by them because they are convinced they are the best. The associated companies are not forced to follow standard methods. They do follow them voluntarily because they decide that it is to their advantage to do so.

591 There is no line of authority between our general engineering staff and the associated companies. An officer of the associated company, by correspondence and conference with the officer of the general staff having the same general functions under his jurisdiction, is given information as to the best methods of practice and gets advice, but the specific instructions to the officer of the associated company come from his own executives.

Q. In other words, Mr. Carty, as shown by this chart, is Chief Engineer of the American Telephone and Telegraph Company? Mr. Hale testifies that he at one time was Chief Engineer of the Southwestern Bell Telephone System?

A. Yes, sir.

Q. But Mr. Carty had no authority over Mr. Hale in any way?

A. No, Mr. Hale reported directly to the executive officers of the Southwestern Bell Company.

Q. Mr. Hale reported directly to the President of the system, and Mr. Carty had nothing to do with him, except Mr. Hale could take up any problem with him that he desired?

A. Practically. Free under the arrangement at all times to do that.

Q. You have been speaking of some of the service rendered under the license agreement. Do you know of any change that was made in the method of payment of the fees under the license contract about 1902? Do you know what the change was?

A. In a general way I do. Before I commence on that I might say that although that was a change in the method of making the payment it was not after all so much of a change, in view of what had gone on before; and I think I can make that point clear. Originally the payment under the license contract was made on a basis of so much per instrument. It amounted to $14.00 a set.

592 By the term "set" we mean the transmitter and receiver which goes with it. That was the original payment. As time went on it seemed that the best development of the business would result from modifying that payment from a flat sum to a sum

which was proportioned to the amount of revenue which that set of instruments brought into the associated company. Some instruments were on lines having a relatively small telephone rental per year, and others on lines having a greater rental.

Q. That would induce a larger use of instruments, would it?

A. By making the charge lower it would tend to promote a larger use of instruments. So that there were a series of arrangements made whereby the charge was reduced in the case of those instruments which were used on lines producing a low rental. The system of charging grew to be very complicated, and it is my understanding that it was desired at that time to simplify it and at the same time to make a further reduction in the payment under the license contract. So the return had been gradually approaching some relation to the gross revenue to the associated company which the instrument brought in. And this simplification was made by passing to a definite percentage of the gross revenue and saving the associated companies from keeping this very complicated series of accounts of the rental for each class of instruments which it had. Just why that was made four and a half per cent instead of four and a quarter or four and three quarters or five, I am unable to say. I do know that at the time the change was made it produced a substantial reduction. I think a reduction of about twenty per cent in the payment that the associated companies were making at that time. It is my unders-anding that every change that has
593 been made in the license contract since it was first made has been a change in favor of the associated company and not in favor of the American Company.

Q. Why wouldn't it be better instead of the present method of payment under this license contract for the Southwestern Bell Telephone Company and other associated companies to pay for the actual services rendered by the general staff, whenever they get them?

A. The answer to that seems to be this: That under the present arrangement the Southwestern Company is perfectly free to come at all times to the headquarters organization and get the very best advice obtainable. We feel that it would be bad to attempt to measure and pro rate these services. If the Southwestern Company were required to pay a specific amount each time they asked a question as they would have to do if going to an outside firm of engineers they might be reluctant to do it; and they would tend to fall behind in their efficiency. We think it is better for this arrangement as it now exists to continue, better for the public and for the associated companies. Under the present arrangement many questions that are asked the general staff by the associated companies relate to what are really fragments of large and broad questions. Now, under the present arrangements, when a question of that kind comes up it can be gone into carefully and thoroughly by the general engineering staff, and it does not seem that it would be possible to do that if the specific company that brought that problem up were required to pay the expense of that investigation. All problems arising that are sufficiently broad to apply to the whole system are gone into that way and even if they do not imme-

diately apply to the whole system they are gone into and
594 settled once for all as far as we can, and then that information is available for the company that raises the question as well as any of the others. Furthermore, I do not know how it would be possible to apportion the great bulk of these services among the individual companies on any other than a broad basis like the present one. The questions as they come up all overlap from one company to another. We might have a question involving the preservative treatment of yellow pine, which would affect several of the companies in the South. We might have questions affecting another portion of the plant that would spread over a number of other companies; and there seems to be no way to apportion that among the companies.

Q. If it was undertaken to charge fees for the work that is actually done by the various associated companies you would be met with the questions as to whether if you spent twenty thousand dollars for the Southwestern Company solving a certain question and later that same question came up with the New York Telephone Company, as to whether the Southwestern Company would have a part of the twenty thousand returned? That would be an illustration?

A. Yes. I don't see how that could be done without a pretty complicated series of assumptions.

Q. There are some companies that have questions arising that might not come up in the other companies at all?

A. Oh, yes.

Q. For instance, I don't suppose you would ever be bothered by the company that operates in Florida having to combat snow storms, would you?

A. No. And we have had problems on the best way to prevent
595 the propagation of mosquitoes in the water that lies in manholes in cities along the Gulf, on account of epidemics. Those don't apply to cities in the north. Of course, we have many problems brought about by sleet and ice storms in the Northern country that don't apply to the South.

Q. The American Telephone and Telegraph has a Long Lines Department?

A. Yes.

Q. Would you need the present engineering staff for the Long Lines Department?

A. Not on anything like the schedule on which it has been maintained. The Long Lines Division has its own engineers, just like the associated companies, and our general staff does the same consulting work with the Long Lines, but that work is small in comparison with the work done for the associated companies. The plant of the Long Lines Division is in the order of eight or ten per cent of the plants of the associated companies as a whole, and the work of the general staff for the Long Lines does not exceed that proportion. Some of the standardization that we do, applying to pole lines, materials and methods of pole line construction benefits the

Long Lines as well as the associated companies in their toll line business, but there is a very large bulk of what we do for the associated companies relating to the engineering expense that has no bearing on the Long Lines at all.

Q. Has the general engineering staff done anything for the Southwestern Bell Telephone Company and the other associated companies with reference to new conditions met on account of the war work done for the United States Government?

A. Yes. I may not say anything about the work we have done directly for the Government in connection with the war,
596 except that it has been very much, and important. But our general staff realized fully a year before our actual entrance into the war that if we became involved in it the Government might make heavy demands on the telephone service. This involved not only providing a large amount of telephone switchboards, cables, pole lines, wires and substation equipment, at training camps, aviation fields and camps in the territory of the associated companies, but their connection with nearby cities, and also a large amount of additional telephone service for Government offices all over the United States. It was first necessary to find out what the requirements of the Government were. This the staff was able to do by sending our representatives to the representatives of the Army and Navy Departments in behalf of the associated companies, and steps were taken sufficiently in advance to arrange for supplying the necessary materials of all kinds. In this way it has been possible for the associated companies in every case to provide the Government with service wherever it has been needed and when needed without delay, and at the same time with a minimum interference with the commercial service. That has not only been of real service to the associated companies, but also to the Government and the public. In fact, what our general staff is doing right along as a regular thing is quite similar to what was done in the development of the Liberty Motor for aeroplanes. There the Government brought together the representatives of the different interests and they compiled their patents and their engineering knowledge and produced what was the best machine available, with all the engineering brains of the country, skilled in that particular line of work. That
597 is what we are doing for the associated companies right along. The war has brought about, too, in the case of other utilities after the emergency arose, the organization of Committees with headquarters at Washington to represent these utilities as a class in dealing with the Government, and that is what we have been doing right along for the associated companies.

Q. The Commission wants us to hurry this along, Mr. Rhodes. So I will ask you to get right down to what has been done for the Southwestern Company and the other associated companies in the way of hard drawn copper wire.

A. I will try to be as brief as I can. In the early days of the telephone business they followed the practice that had been in vogue by the telegraph companies. Iron wire was adopted for the early telephone lines. It was poor for telephone transmission,, difficult

to talk over, noisy, and transmission over it was at that time limited to something like forty or fifty miles. The associated companies came to us with their troubles. They wanted something better. The general staff tried all sorts of alloys, wire made of phosphorus, bronze, silica, and others. Afterwards we discovered by running two wires instead of one, making a so-called metallic circuit, an improvement was made. But there was trouble with that. Back in these early days there was not the science in the art of electrical engineering as it is known today. Colleges did not turn out trained electrical engineers. So we had to develop the art ourselves. The improved transmitter and receiver and the metallic circuit extended the range of transmission, but the limit was reached all too soon. The general staff studied the problem and concluded that copper
598 better than any other material would meet the telephonic requirements of the circuit, but they were confronted with the problem that copper wire made in accordance with the state of the art at that time was mechanically too weak to be strung between poles with ordinary length of span. It only had about half the tensile strength of the iron wire that had been used up to that time. But the great importance of the use of copper wire was realized, and representatives of the general staff went into the wire mills and experimented in methods of manufacture and finally produced what is termed today hard drawn copper wire that has all of the advantageous electrical properties of copper and at the same time has practically double the tensile strength of copper wire, is as strong as the iron wire which had been used before that time. That is the type of wire that is used generally for all line construction at the present time. Without that the telephone system would have been very much restricted. There is today upwards of three thousand miles of that kind of wire in the St. Louis exchange of the Southwestern Company.

Q. Describe the development of cables.

A. In the early days of the business the operation of telephone lines in cables was a very difficult problem. At first there was no method of putting the wires in cables so they would work even in cities, much less communication between cities and suburban areas, and for interurban lines. Some of the early experiments began in 1880. At about that time it was impossible to talk through a cable more than about half a mile long. With that amount of cable in the circuit the transmission was restricted to only about fifteen miles into the suburbs. The first cables that were made had the
599 wires insulated with a rubber or gutta percha compound.

A little while ago I made a computation as to what would have been the effect on our cable plant if we had employed the old type of rubber insulation and our plant had had the same transmission efficiency that the present cables have, I reached the conclusion that the cable plant would have cost more than ten times as much as it is today for the new type cable. The point is that this rubber has very bad electrical properties for the alternating current. It is what is called a high specific inductive capacity. Our aim in this development has been to improve the efficiency of our cables,

When I first came into the business the paper method of insulation had just been introduced. Before that there had been a long series of experiments with fiber insulations. Cotton had been treated with paraffin and resin oil, and all those changes were steps in advance, but the use of paper produced a much more efficient cable than had been known before. At the time I came into the business, in 1892, the one hundred pair cable, of nineteen gauge wires—about thirty-six one-thousandth- of an inch in diameter—had just been developed. The largest cable before that time had been fifty pair, nineteen gauge. Then by successive efforts, making experimental cables and trying them out, we worked up the number of pairs successively to one hundred and twenty pair, nineteen, in 1895; to one hundred and fifty pair, nineteen, in 1896; and to two hundred pair, nineteen, in 1898. Then we undertook the development of what we term fine wire cable, wires being twenty-two gauge, or twenty-five one thou-
sandths of an inch in diameter. That required a very elab-
600 orate series of experiments in applying this paper in the best way. The ideal way of a cable arrangement would be to have the wires separated by nothing but air. The nearest we could come to that—so that the aim in putting this paper on the wire is to produce a separation between the wires with as little material as possible in between, and at the same time to have the wires insulated from each other, and properly separated. About the year 1900 or 1901 we produced four hundred pair, twenty-two gauge, cable.

Q. Eight hundred wires in a cable?

A. Yes.

Q. What was the size of that cable?

A. These cables have all been about two and five-eighths inches in outside diameter. That seems to be the maximum size of cable that can be advantageously handled. When cable is made bigger than that it tends to buckle where it is bent, and generally handles very badly. 1904 saw the production of the six hundred pair, twenty-two gauge cable. In 1912 we produced the nine hundred pair, twenty-two gauge cable; and in 1915 the twelve hundred pair, twenty-four gauge, the wires of which are twenty one-thousandths of an inch in diameter.

The development of this cable from the fifty pair to the twelve hundred pair that I have described, represents a continuous train of development, extending over that long period, and it is not by any means yet completed. We have other work on hand dealing with the possibility of the use of even smaller wires, and the possibilities of further economies in the arrangement of these wires in the
cables. At the same time that this work has been going on
601 we have conducted studies into the laws of the transmission of speech by electric currents through these cables, the result being that we have been able to reduce the amount of copper in certain portions of our line and to increase it somewhat in others, the net result of which has been that in an exchange like St. Louis in about seventy per cent of the cables used in subscribers' lines and their trunks between those the first cost has been reduced nearly one-half. In all this cable development the question of durability is a

matter of very great import. If the insulating material, this paper, contained any chemical which might produce internal decay, the result of that in the enormous amount of this cable placed all over the country would be a calamity in the plant. To avoid that it is necessary whenever any of these changes are made to study it with elaborate care by physical and chemical tests to make sure that we are not introducing any trouble, and the kinds of paper we use are based on these studies of this kind. The developments that have been made by the general engineering staff include the development of the loading coil and the repeater, and it is now possible to talk through cables five hundred miles long, where back about 1880 it was only possible to talk through cable about half a mile long.

In connection with this cable development there is another side of it that has been of great importance to the associated companies. In the first cables that were employed it was found that lead by itself as a material for the sheath did not have the proper mechanical and chemical properties. These properties were improved by alloying the lead with about three per cent of tin, so that the result-
602 ing sheath was about ninety-seven per cent lead and three per cent tin. In recent years the price of tin has increased very rapidly, so that even though only three per cent was used its cost became quite an important factor in the cost of the cable. Our general staff took up that subject and conducted long and patient studies and experiments in the laboratory, and field trials covering a period of four or five years. We studied a wide range of alloys, various combinations, lead and antimony; lead and bismuth; lead, tin and copper. Also tin and antimony. We made many tests with various lengths of cable, and submitted them to tests going on in the laboratory for days and days and kept account of the number of vibrations so that we would have the actual data for comparative purposes. Then we had the actual lengths made and it was drawn in and out of subways, and their behavior carefully studied. Other lengths were placed on bridges and elevated railroad structures, where it was subjected to vibration. The necessity for making those tests is that one of the principal points of weakness in a cable sheath is the result of crystallization and cracks, as a result of vibration, and those cracks, if allowed, will immediately destroy its usefulness. Our tests, covering a period of four or five years, the result was that we were able to recommend to the associated companies a cheaper and equally efficient sheath, which consisted of an alloy of one per cent of antimony and ninety-nine per cent of lead. That has been at the disposal of the associated companies for about five years. At the time it was introduced it made an immediate saving of about eight per cent in the prices they were paying for their cables. The sav-
603 ing is less now, because the price of antimony has gone up. It is used in the manufacture of shrapnel, and the saving now is around four or five per cent in the cost of the cable. As a result of the development of this fine wire cable, and what is even more important, the development and determination of the laws governing

the transmission of speech through these cables, which have enabled the Southwestern Company to introduce them into their plant, under proper position to make the best use of them, the Southwestern Company has to the year 1916 saved over a million dollars in the first cost of its local cable plant in the City of St. Louis. The annual saving in annual charges corresponding to first cost saving amounts to fully $140,000.00. Inasmuch as the Southwestern Company must continue to grow every year, as its plans already made contemplate many extensions during the coming years, this saving is going to increase from year to year. These savings I have mentioned take account only in the saving in the cable itself, by being able to place so many more wires inside a single sheath than before. There has been a saving in the number of underground ducts required. The more wires put in one underground sheath, the fewer ducts are required. That saving has amounted to over $190,000.00 in first cost in St. Louis or $20,000.00 a year in annual charges.

Q. In other words, where you would have had ten holes running through the ducts to cover ten cables, 2,400 wires, you now put them in one duct, thereby saving nine ducts?

A. Yes.

Q. Tell us about phantom circuits.

A. The term phantom circuit, as used in the telephone business, I think requires perhaps a little preliminary definition. If
604 we were considering in the open wire plant the bare wires strung on cross arms—if we have four wires on the cross arm, side by side, the ordinary arrangement is that two of those wires are used for one conversation and two for another, each of these two constituting what is termed a metallic circuit, and providing for two separate talks. Now, the phantom principle makes it possible to connect those wires together through suitable apparatus to form a third circuit out of these two circuits, so that by means of four wires it is possible to carry on simultaneously three conversations instead of two, without any interference. That was first proposed about 1884, and under favorable conditions at that time it was possible to get some results from the use of phantom circuits, but there was no practical use made of it for a great many years. In fact, it was scarcely more than an interesting scientific curiosity. There were unforeseen difficulties in operating these phantom circuits which no one knew how to overcome. Extremely delicate and sensitive balances in wires were required, and all this had to be carefully studied by the general staff; and a very careful balance was required in the coils at the terminals of the circuit to enable this phantoming to be carried out.

The use of this phantoming principle by the Southwestern Company has resulted up to 1913 in saving over $165,000 in first cost over the plant that would have been required if this had not been——

Chairman Busby:

Q. So that in a cable having twenty-four hundred wires it is possible to conduct sixteen hundred conversations—eighteen hundred——

A. It would be possible to conduct eighteen hundred if that
605 principle was applicable to as fine wire as this. It is not economical to employ it for short lines where these very small wires are used. It is used in the case of the cables which bring in the company's toll lines, lines of considerable length, and it was—that brings me to another interesting phase of the development: That after the phantom principle was worked out for the open wire lines there were no cables that attempted phantoming, so that if you brought in two pairs of wires with a phantom circuit on them you had to utilize three pairs of wires in the cable. As this cable was on very large wires on account of the efficiency required in the toll lines there was an opportunity there of saving that was not available. So the general staff took up developing the duplex cable, whereby these wires are twisted in such a way that it is possible to carry a phantom into the cable as well as using the wire alone.

Mr. Frank:

Q. And the duplex cable was developed?

A. Yes. There is some of it in St. Louis today. It is a relatively new thing, but the use is increasing. You would not expect to find as much as in some older development.

Comm. Flad:

Q. Can you carry that a step further and use a phantom circuit, two lines, of four wires each?

A. In some experimental work the phantom has been compounded, a phantom on top of a phantom, but there are difficulties introduced in the work so that it is not an economical success today. What the future is, it is rather difficult to say.

Mr. Frank:

Q. What has been done in the matter of loading circuits? Describe what loading is.

A. The loading principle is a means for increasing the
606 telephonic efficiency of a circuit. It does not operate in the way in which a repeater does to bring in new energy at a given point in the circuit and take already weakened telephone current and apply new energy and send it on its way again in the same form. It does not operate in that way, but the application of the loading coil to the circuit diminishes the losses in the circuit and makes it more efficient so that the telephone current proceeding over the loaded line is not attenuated to the extent it is if it proceeds over a non loaded line. The theory upon which this coil works is very difficult and intricate to explain without going into the higher mathematics, and unless the Commission wants to go into it I won't do that, but I can show you what loading coils look like.

Here is the small loading coil which is applicable to cables. It consists first of a core of fine iron wire. There is the iron wire of which the core is made (indicating). That wire is four-thousandths

of an inch in diameter and it is wound up into a core of this kind (indicating), which contains about 69,000 turns. The purple color is due to an insulating fluid which is put over each individual wire to improve the magnetic properties of the core, which requires those wires to be magnetically insulated one from another.

There is a section of the loading coil (indicating) which shows this core, which appears almost as a solid piece of iron. That core has wound over it two windings, one for each side of the circuit, so that a circuit comes in from the cable here, goes around this winding and around the core and out, the other side of the circuit comes in here and goes around this winding of the core and out, the result of placing that inductance in the circuit being to
607 minimize the losses. (All indicated).

Now, loading coils of that type applied to the open wire lines approximately doubles the range of transmission. When they are applied to cables they increase the range of transmission from three to four times what it was before. These coils are placed in cables at intervals of about a mile and a half. They are collected together and placed preparatory in an iron pot, which in an underground cable is placed in the man-hole and connected by means of a step cable to a cable which is desired to load.

The fundamental principle of loading was disclosed in the patents of Doctor M. I. Pupin, who was the professor of Electrical Science in Columbia University. The principle as enunciated by him was a mathematical one. It was arrived at from purely mathematical considerations and an enormous amount of work was required in order to reduce these mathematical ideas to practical working form, and that work was all carried out by the general staff. The American Company in the interest of all the associated companies acquired Doctor Pupin's patents and a vast amount of work has been done to bring those very complex ideas into working form. Our work is not yet over on the development of this loading, but for many years now it has been at the disposal of the associated companies. It has required continuous work by a large force of the very highest type of engineers that we have, men who are highly trained in mathematical physics.

One of the first developments was, there was no wire of the kind we needed for the core of this coil available. We had to go
608 into the works of the wire manufacturer and study out methods of making this very fine iron wire of the particular character of iron it was necessary to employ. The first wire we got cost about $36 a pound and as a result of the work we did that was afterwards brought down to about 60 cents per pound, but it wasn't upon the market.

There is another interesting phase in connection with that loading that applies to the phantom circuit and the duplex cable that I have been speaking about. For a long time after this art of loading was developed it was not possible to load phantom circuits, so that the associated company was face to face with the problem that if he would use loading it couldn't phantom the circuits or if they used phantom circuits it couldn't load them, so that our general

engineering staff took up that problem and, to make it brief, has developed and placed at the disposal of the associated companies methods so that the great advantage of loading can be applied to phantom lines, both in open wire and in cable, and it is not impossible to load what we call the physical circuits, the two circuits originally available to talking, and also to load the phantom circuit, and the application of the phantom loading principle makes even a larger gain in the case of a phantom circuit than it does in the case of loading the side circuits.

Some time ago it was found that where loading was used that there were losses where a loaded line was connected to a non-loaded line and there was danger to face that that would simply limit the companies in taking advantage of the loading. That in turn required long and extended experiments, with the result that apparatus
609 and methods have been devised which practically overcome these reflection losses, thereby enabling the associated companies to get the full benefit from loading.

Loading has been applied in St. Louis and has resulted in a saving in the first cost of plant of $200,000 over the plant that would be required in cables to give the same transmission efficiency if the loading had not been available, and that corresponds to an annual saving of over $25,000 a year.

Q. You mean by that that if the Southwestern Comany did not have the right to use these loading coils it would have had to have spent $200,000 more on the plant it has in order to get the same efficiency that it now has in giving service?

A. Yes, sir.

Q. And that is a patented device, isn't it?

A. Yes, sir.

Q. If the 4.5 per cent arrangment was not in existence the Southwestern Company would not have the right to use this, would it, unless it paid a royalty?

A. Now, I don't want to have any misapprehension on that point. This device was originally patented 17 years ago. The original Pupin patents expired last June. There is a peculiarity of all this development work; it is strikingly so in the case of this loading, that in almost every thing that we take up and develop the first idea, important however it may be, afterwards becomes a rather small portion of the whole development work in reducing the idea to practice. An enormous amount of work has to be done in perfecting the details. So that now, although the original Pupin patents have expired, there are patents in force covering the shape of the coil which we use, the toroidal form of coil shaped like a doughnut, the
610 proper methods of loading phantom circuits, the use of what we term inequality coils in connection with loading to reduce these reflection losses at terminals, various cases for protection of the coils in protecting coverings, are all covered by patents. Numerous aptents cover details in the design and methods of manufacture. So that altogether the whole art has been developed and covered by patent since the original principle. I want to make it clear in that connection that the original patents have expired, but

there are no loading coils that are available for anybody else's use at the present time.

Q. What has been done in developing other means of transmission of speech?

A. The General Staff has been conducting exhaustive studies to extend still further the range through which it is possible to transmit speech, with the end in view that subscribers in such a city as St. Louis would be enabled to talk satisfactorily with subscribers in any other city and town in the United States, however distant it may be. That has been the ideal that has been before us in one side of our development work. It is not only, however, in improving transmission to points outside of the territory that these achievements are of benefit to the Southwestern Company, but they are of such a nature that they will have an important application, and they do now have an important application within the trunk line plant of the Southwestern Company itself, greatly improving transmission not only from points on their own lines to point outside their territory, but also between points entirely within their own territory.

An installation of the amplifying device by which these results are attained, and this amplifying device is a true form of
611 relay in that it operates to take the weakened telephone current and build it up by new energy and start it off again revivified but still in the same form of telephonic wave in which it came in. That is the nature of this device, and an installation of that has already been made by the Southwestern Company and there are others in progress within this territory.

Q. Is that the repeater?

A. Yes, sir. Now, inasmuch as these repeater improvements are the subject of patent matters that are now pending, it is not practicable to enter into a complete technical description of them, I don't know that the Commission would even care to do that, but it is, however, interesting to point out in general how this solution which the General Staff has attained differs from the solution of improving speech transmission that was proposed by a number of European scientists as well as by a number of inventors in this country before it was worked out by our General Staff.

The method of attack of these other scientists and inventors was to employ special and very ingenious and complicated apparatus, batteries, switches and special transmitters at the subscribers' stations. Now, we made a prolonged study of that situation and concluded that a solution of the problem was not best to be found in that manner, but rather was it to be found by improving the methods of line design and by developing and introducing this intermediate repeating apparatus in the trunk lines themselves. This method which we decided to adopt and have worked out, has met with complete success, so that subscribers in St. Louis can now talk over vastly greater distances than ever before, practically to all points in the United States, and this they can do without any expense to
612 the Southwestern Company for any new construction and without changing even a wire or a piece of apparatus of any

kind pertaining to the subscribers' stations or the subscribers' lines or the local switchboards in St. Louis.

Now, the value of that achievement is, I think, emphasized still further when it is understood that if the method proposed by these European scientists had been followed, even if it had been practical in a laboratory way, it would have been necessary to have reconstructed every subscribers' telephone station as well as all the central office switchboards and much of the subscribers' line plant in order to extend the range of transmission.

Q. Do you know anything about the wireless telephone, Mr. Rhodes?

A. Yes, sir; I won't take very much time on that. In working out these wire problems involving the use of repeaters the engineers of our General Staff recognized that they had developed certain scientific methods and devices which might, by further work, successfully solve the problem of wireless telephony. Work was, therefore, directed to this problem with results which were conclusively demonstrated when in 1915 speech was transmitted through space without wires across the continent of North America from Washington to San Francisco and to Hawaii and across the Atlantic Ocean to Paris, and these results were so remarkable that they have attracted the attention of scientists and engineers and laymen throughout the world.

The problem of connecting wires and wireless systems together has been solved by the general staff so that a person speaking
613 at one end can talk over the wire hundreds and even thousands of miles long and at the other end, by proper connection through this system to a wireless station, can talk across the ocean or to a moving ship at sea. This has been accomplished by an apparatus developed, designed, manufactured, installed and operated by the engineers of the general staff, with the co-operation of the engineers of the Western Electric Company.

Now, we have studied with very much care the possibilities and limitations of wireless telephony and its place in a comprehensive telephone system. I think it may be confidently stated that wireless telephony will supplement, but not displace, the wire system. It will serve to connect the wire system with ships at sea, with steamers navigating rivers like the Mississippi, Missouri and Ohio, across large bodies of water and at other places where conditions make it impracticable to extend the wires or where such extension would be extraordinary difficult. The peculiarities that are apparently inherent in the wireless seem to limit its commercial application to systems of that kind.

Q. How about the systems of rural lines and party lines? Has any work been done on that?

A. Yes, sir; there has been a great deal of work done on that, but there is so much to say on all of this that we could leave that out. Suffice it to say that the general staff has done a great deal of work in developing a type of apparatus that makes party line use possible.

Q. That was done a long time ago?

A. That was done a long time ago; yes, sir.

Q. But that was worked out by the general staff. What
614 has the general engineering staff done for the associated companies on work on fundamental plans?

A. I don't think I can give a fair idea of the benefits from fundamental plan work without briefly describing what the work consists of. The telephone systems of the associated companies have been continually growing from the beginning, not only in the number of stations, but in the amount of the business handled, and the growth has, I think, been faster than the growth in the population and, as far as we can see, this is going to continue into the future.

Now, the telephone company undertaking to give service in St. Louis cannot select its customers from one district only and neglect others, but within reasonable limits it has got to supply the outlying residence districts also. In order to do this, it has got to erect telephone buildings from time to time in different parts of the city; it has got to install switchboards in them; it must build subways and pole lines radiating from those buildings and connecting them. Now, in order to do that, it is impossible to limit the construction exactly to the present day needs. If, in order to serve a given locality at the present time, we must now place underground a single duct, it would be a mistake to limit the construction to exactly the present needs, always provided that further growth was expected. Some provision for the future must be made and the number of ducts to be installed in advance is an important engineering and economic problem. If you needed one duct this year and another one next year, and so on, it would be wasteful to put down one duct this year and the next year to re-excavate the street and put down another one, and so on each year. It would also obviously be wasteful to
615 say we think we will need so many ducts a hundred years from now and we will put down all we will need in the next hundred years. That would be just as wasteful in the other direction because the carrying items on those ducts would more than eat up the saving. But somewhere within those extremes there is a limit where it is most economical to provide for, and our general staff has done a great deal of work on that problem, and under average conditions it works out that the most economical time to plan for is from fifteen to twenty years in advance.

Now, a similar problem arises in the case of buildings. You cannot buy small parcels of land and make buildings always the exact size that you require, and in providing switchboards you cannot provide them for exactly the present requirements. You have to make an estimate of what the ultimate capacity will be and provide for that. In the beginning it is not necessarily fully equipped for the ultimate capacity, but provision has to be made to care for it.

Now unless all the factors pertaining to growth are studied you cannot tell the proper and best size of building or switchboard to plan for, nor how many buildings there shall be or where they shall be located or how many ducts. These factors all concern the most expensive portions of the telephone plant and surrounded by a great deal of uncertainty. They constitute serious business hazard which the telephone company cannot avoid, and in view of the im-

portance of this subject, our General Staff has made it a matter of prolonged study and investigation covering years. We have devised methods of making what we term fundamental plans and
616 development studies which minimize as far as possible the risks growing out of the conditions inherent in growth. We send our engineers from the General Staff to assist the associated companies to teach them the latest developments in regard to methods of making these fundamental plants, and frequently at their request, to assist them in making these specific plans themselves.

In providing for the plant fifteen or twenty years in advance it is necessary for the administrative and commercial officers of the associated company, who are familiar with the present local conditions, to make a serious study of their business and to consider the possibilities of future growth in every section of the territory. They make these studies themselves. Then the representatives of our General Staff who have had a nation-wide experience in this important problem, sit down with them and together they all give attention to this matter of development and make the most trustworthy forecast that can be made. No one can accurately forecast the future in this respect, but by the most careful attention following out these methods the sources of error are reduced as far as possible.

There are two alternatives that confront us: To make these careful plans, taking into account everything we can think of affecting the future and provide our plant on that basis. The other alternative is to send the man out in the street with a pick-axe and have him dig up the street and look around and see what size cable he thinks ought to go down. Our experience has been that even though we don't always get the right result by making these careful plans that we do a great deal better job than if we followed the pick-axe method.

617 Q. This work is done for the associated companies by the General Staff?

A. Yes, sir. We have made a series of these plans for St. Louis and the plans that are made contemplate construction ultimately amounting to more than eleven million dollars to be based on these plans, so that it is difficult to over-estimate the importance of making them as accurately as possible.

I might say that these plans are not made once and for all and then nothing done for the next twenty years, but every few years we make them over again, revising our views, taking into account the things that have actually occurred and again looking out fifteen or twenty years into the future, and in that way we avoid in the development of these telephone plants errors of inconsistency that would otherwise happen if no comprehensive plan existed as a guide. Having the plan to start with and modifying it every few years to meet contingencies, we find that the plant can be built with a much smaller loss on account of bad estimates for the future than would happen in any other way.

Q. Do you know that the General Staff is even at this time making a fundamental plan for St. Louis?

A. Yes, sir; there are men in St. Louis now at work on that problem.

Q. Making a new fundamental plan for the city?

A. Yes, sir.

Q. What are the benefits to the associated companies from the work of the General Staff on the standardization of apparatus and method?

A. The use of uniform apparatus is desirable in all places where conditions wil- permit. It is of great importance from the standpoint of economy and efficiency of the service. Unless our
618 General Staff existed to establish standards there would be a multiplicity of types in every one of the thousand pieces of apparatus composing the telephone system, and the result would be an impairment of service and a lack of economy and efficiency in many ways. Intercommunication between divergent types would lead to complicated engineering and operating problems and I am sure that the cost of the apparatus would be considerably increased because with each new development, instead of having to apply that to one standard type it would have to be worked out to apply to a dozen or more different types that might be in existence and consequently divergencies would all the time be increasing. If this standarization of development was not done for all of the associated companies together, each one would require a separate development staff, which would greatly increase that engineering expense. There is no doubt in my mind that the Southwestern Company gets its apparatus cheaper than if there were a multitude of standards.

The importance of this subject of standarization is, I think, shown by the fact that in the Bell System as a whole there is going into plants of the associated companies in a normal year about $18,000,000.00 worth of central office and sub-station equipment. About $9,000,000.00 worth of cable, and about $19,000,000.00 in other materials, making a total of $46,000,000.00 in materials alone, being the addition in a normal year, to which the benefits of standardization apply. Now some who are competent to judge of that subject have estimated a saving of 5 per cent per subscriber, but even assuming a saving of only 2 per cent from standardization it would
619 amount to about $900,000 a year. Standarization makes the best available for all, it permits of the most effective development and it makes available enormous supplies of material and repairs in emergencies. By that I mean that in time of fire or flood it is possible with standardized apparatus not only to bring in materials from other parts of the territory and other territories, but it is possible to bring in men who can work with these materials and find that they are the same and the construction methods are the same as those with which they are accustomed to work at home. Now that has proved itself in many cases, such as the San Francisco fire and the Dayton flood and the Omaha cyclone and the Baltimore fire.

Q. Mr. Rhodes, you were speaking of standarization. I wish you would give us the rest of that.

A. There was one more point I wanted to bring out in that: That we don't have merely one standard, but as many standards as varying conditions require, and that our standards are not by any means ironclad; that the standards are changed whenever it would be an advantage to the associated companies to do so, and we recognize clearly the fact that special conditions may justify departure from all of them. In fact, we give a great deal of consulting engineering advice to associated companies on this very point.

Q. What has been done by the general staff toward switchboard developments?

A. The first switchboards employed in the early days were largely based on telegraph practice. In adapting these switchboards to telephone purposes different people on the general staff worked with the associated company representatives and got up different types.

620 The first type was a little switchboard that provided for about ten wires. It had the wires ending in what we termed drops, which were little devices constructed like a hotel enunciator, so that when a subscriber turned a crank at the substation set this little drop or lit-le index would fall and attract the operator's attention, and as long as there were only a very few lines that type of switchboard worked fairly well. As the number of lines grew two or more of these little ten-line switchboards were placed side by side and the operators sitting in front of each would reach across to make connections with the lines or would speak to each other. Finally, as the system grew, so many of these little switchboards were placed side by side that the operators couldn't talk to each other to complete the connection without confusion and the sections were joined together, first by strips of brass and afterwards by wire, to avoid the confusion which was brought about by the operators calling out. Sometimes they would call out "Connect 57 on 4," meaning to connect subscriber's line 57 to drop No. 4 and complete the connection in that way. In order to avoid that confusion one of the schemes that was tried was to write the number in pencil on a marble and put the marble in a tube and it would run down and come out in front of the operator and the operator would get the number and complete the connection in that way. That was replaced by a system of telephoning between the operators, which led to what was called the transfer switchboard, which was reasonably satisfactory up to about 2,000 lines. It didn't give good service, as we know it now, but it worked. It was seen that unless something better was de-

621 veloped that as the system grew there would be a serious limit on the growth of the business. As a result of that the so-called multiple principle was developed, whereby if there were twenty operators each with fifty lines terminating before her, instead of having twenty separate groups, all the lines were carried before every operator so that she could complete a connection between the fifty lines which terminated at her position, as it is called, with every other subscriber's line in the office.

The development of that multiple principle was one of the very

important steps in the switchboard art. It carried with it another development, that unless suitable precautions were taken an operator, when a line was called, she would insert one of the plugs of her connecting cord into this called line whether that line happened to be in use or not. It was necessary to avoid that, so what is termed the busy test was developed, whereby the operator touches the tip of the plug to the sleeve of the jack and, before completing the connection, if the line is busy she gets a click in the head telephone which she wears, showing that the line is busy.

Now a great many of the features of the intermediate development I won't take the time to allude to. I would like to speak of the development of the so-called common-battery system. Before that time the subscribers signaled by turning a crank of a little alternating current generator which operated a drop signal before the operator. In connection with that system there were batteries installed at every subscriber's station to provide the current to actuate the transmitter. The use of the common battery system
622 resulted in avoiding the use of all these batteries at every substation by substituting therefor a single storage battery at the central office. That has carried with it the establishment of a system of signals employing little electric lamps which are automatically operated when a subscriber removes his telephone from the switch-hook, so that the operator now not only puts up the connection by means of the information conveyed by these lamp signals, but she takes down the connection by the same means, little lamp signals associated with the connecting cord giving her the information when both subscribers restore their telephones to the hooks. It is no longer necessary, as it was before, for an operator to listen in on the circuit and ask the subscribers if they are through, but she gets all this information automatically through these little lamps without having occasion to listen in on the circuit.

Now in all of this development of the common-battery system it has had a great reaction in that the number of switchboard sections required has been reduced, which has had a corresponding reaction on the buildings and the amount of land required for them. This development of the common-battery system was the work throughout of the general staff, the mechanical problems connected with it being worked out with the co-operation of the engineers of the Western Electric Company, but in it all the general staff has been the controlling factor. Each piece of apparatus developed in connection with all these switchboard improvements has received the careful study and scrutiny of the general staff to make sure that the best results were attained.

An important step in connection with this shows how some
623 portions of the development come in and then how they partially go out. In what we term multi-office cities, cities like St. Louis, where there are a large number of offices, as the number of offices is increased the proportion of the calls that are trunked between the offices is increased, and when that gets to be large enough it becomes advantageous to omit the multiple-jacks. I won't go into that any further except to say that the staff has done a great

deal of work on that. I think Mr. Estabrook can go into that better than I can because it is involved with the traffic or the operating engineering.

To illustrate one branch of the work which looks small in itself and yet which has led to large economies, I might mention the improvement that has been made in the switchboard cords, the flexible cords which are placed in pairs before the operators, and used by them in completing a connection. Two large moves have been made in that matter of the improvement of switchboard cords which have resulted in a type of cord which reduces the maintenance. They have to be repaired very much less frequently and they also improve the service. In this item of maintenance on these cords alone this development which we have made, which the general staff has made, has resulted in saving the Southwestern Company $29,000 each year in St. Louis alone.

Now all of the work that has been done on the development and standardization of switchboard apparatus applies in most important respects to St. Louis. I can illustrate one phase of this development in connection with the relays which are used in the common-battery type of central office. There are two of these relays associated
624 with each subscriber's line. One is termed a line relay, which is the piece of apparatus which when a subscriber removes his telephone from the hook a current flows over the line. This relay, the winding of which is in the circuit, attracts this armature and closes the contact which lights the little signal lamp in front of the operator. When the operator plugs into the line to answer the call the insertion of that plug in a spring jack, as it is called, operates the cut-off relay, which removes the line relay from the circuit and extinguishes the line lamp.

Now this is the form of line and cut-off relay which were used a number of years ago. They are mounted in strips. This is merely a dust-proof cover to protect them and there is a strip of ten of these pairs of line and cut-off relays.

That is the type that was used prior to 1912. In a large office there may be as many as ten thousand of these pairs *or* relays, and I am going to describe briefly this development, because it is characteristic of one form the development takes. Here (indicating) is a form of relay which in 1912 took the place of this other relay. You see, looked at edgewise, they are very much smaller than the previous type. They also had another advantage, in that they cost the associated companies from twenty to twenty-five per cent less than the preceding type. The original idea in this relay (indicating) arose in the mind of a man in the laboratory of the Western Electric Company. As soon as his idea could be reduced to definite form it was talked over with the engineers of the General Staff in order that we might consider whether that was a type
625 which it would be wise to develop to be used in the service of the associated companies. We thought it would, and the Western Electric Company was directed to proceed with that development. From then on we kept in close touch so that our knowledge and experience from an operating standpoint could be incorporated

with their experience as manufacturers, and they produced a form which they thought would embody these desirable features. They were ready to manufacture it. So the General Staff organized and conducted very thorough tests along practical conditions, but it was found that the first relays which they developed did not meet the conditions which proper relays should meet; that if they had been placed in service generally all over the country, as from a manufacturing standpoint seemed to be right, that the associated companies would have had very serious losses and troubles with them. So that the development work was sent back and the troubles pointed out, and they went at it and finally produced the form we see here, which we tested. Those relays are now saving the associated companies as a whole about $150,000.00 a year in their purchase of relays.

Mr. Frank:

Q. What does the staff do on building plants?

A. The work of building plants has grown with the development of the telephone art. At first switchboards used were very small and light, and a specially designed building was not required to accommodate them. At the present time modern telephone buildings are specially designed for the purpose, and the construction specially arranged for the accommodation of the apparatus to be placed therein and for the accommodation of the working force. Attention
626 has to be given to the strength of the floors, not only to support the present equipment, but also the ultimate equipment and future changes as far as we can see them in the types and weights of central office equipment have to be taken into account in order that the building may be useful when the new form of central office apparatus replaces the existing form. The growth and expansion of the building have to be provided for; methods of lighting adopted for switchboard operation; the supply of air; exits, both ordinary and fire exits; precautions taken to reduce the fire risk, both external and internal; the best arrangements for economy in the first cost and in the maintenance of the apparatus. How to bring in the cables to the buildings and how to best arrange for the cables between the various pieces of apparatus in the building, have to be worked out. The way that is done is this: The General Staff has drawn up standard floor plans providing for a large number of different conditions which when carefully worked out best meet the requirements. These are furnished to the associated companies and are largely used by them in their engineering in new buildings. The building detail is cared for by the engineer of the associated company and by the local architect employed by the company, but they are largely assisted and guided in their work by these standards established by the General Staff. The General Staff also does a large amount of consulting work whenever the associated companies call upon us in regard to special buildings. The point of it all is that this work is placed at the disposal of the associated companies, so that the building will be designed to suit the equipment, and not
627 so that the building will be built and then afterward the equipment have to be adapted to the building.

Q. Does the General Staff do any work on outside plant development?

A. Yes. You are getting right now into my special province, and if I talk too much about this I hope you will check me. All that I have said in regard to the development and standardization in other portions of the engineering work applies with equal force to outside plant and the materials used in its construction. The General Staff maintains one division, an investigating department, which is a corps of experts studying this particularly important part of the plant, on account of the enormous amount of money that is now invested and the large annual additions made by the associated companies in their outside plant. The nature of this work can be shown by thinking of the confusion and diversity that would result if each associated company built their own lines without regard to the standards that are carefully developed covering such matters as the strength and spacings of poles, the amount and character of their guying, the kind and dimensions of cross arms and pins, spacings between the wires, the construction of the various pieces of hardware, the guy rod, pole steps, etc. I have taken the poles as an example of the sort of careful engineering work that applies to other portions of the plant. I remember very many years ago going into the territory of one of the associated companies where the general manager told me that he could go around and look at any of his pole lines and tell the foreman who had built it. That foreman expressed his individuality in that and did what he thought was right. That means no foreman was using a standard method. We have picked out the
628 one we think is best. In our pole line work we take account of wind and sleet loads, and we make engineering computations on the strength of these poles, which are checked by actual tests. We will take a large number of poles and set them up and break them under measured loads to determine the characteristics of the timber. We have provided standard specifications, not only covering the material, but the construction of the lines in great detail, providing for lines all the way from one or two circuits up to lines of sixty to eighty wires. Another branch of this work is related to the preservative treatment of timber. We have conducted continuous and exhaustive studies covering a very long period of years, and a great deal could be said about this one branch of the subject alone. Our work has dealt with the character of the preservative materials to be employed and the quantities to be used, the details of the impregnating process, the varieties of woods most effectively treated, and we have gone very fully into the question of the complete treatment of poles and partial treatment for the portion that is set in the ground, including treatments by what is known as the open tank process and treatments by the brush process. Our work extending over these years has been of such a character that the United States Forestry Service has joined with us in this work to get the benefit of our work and experience along this line. A couple of years ago one of my assistants and myself prepared a paper which was read at the meeting of the American Institute of Electrical Engineers in St. Louis on one branch of this question which we had worked out

with the Forestry Service, and it was of such great national
629 importance that it was deemed to be advisable to publish it.

In connection with this work on poles, we have given attention to what might happen when the supply of timber is very much scarcer than it is at the present time. We considered a number of years ago experimental work on reinforced concrete poles, poles of steel and concrete. We have constructed about five hundred poles, and they have been designed in different ways, waterproofed with different materials, and experimental sections a mile long of those poles have been set in various parts of the country. We have not done that with the idea that concrete poles will be used in the course of the next few years. The first cost of those poles is so great that it is not economical to use them at the present time, but some day, we don't know how many years ahead, they may prove desirable for the associated companies. We want to be in a position when that time does come to recommend to the associated companies the best type of reinforced concrete pole, and we have set these poles up around and are observing them from time to time in order that when that time does come we may be in a position to recommend, based on our actual experience with these poles, what is the best form to use. In all this I have used pole lines as an example. The same work has been done and is going on on underground conduit, underground cable, distribuiting plant, aerial cable, cable terminals and many other portions of the plant. Specifications and all other necessary information as to the best way to build these kinds of plants are in the hands of the associated companies, and they are advised as to
the best practices. We consider all new suggestions, whether
630 arising in this country or abroad, whether arising inside or outside our system. We study them all carefully and thoroughly, and if they are found to have a proper place they are adopted. When it is desirable to put these specifications in handbook form for the associated companies we do that, and I have one or two typical handbooks of that kind. There (indicating) is one that up to this time has been current. It replaced two previous issues and it contains complete specifications for constructing exchange aerial plant, with illustrations suitable to place in the hands of the men who are actually constructing the plant. Now, that work is going on all the time. I brought this here, together with the printer's proof of a new handbook which is just being completed on the subject of cable splicing. I can leave these here as exhibits; I only have two of them, but they go into the subject at great length, over one hundred pages, with complete details, and every one of the points covered there represents the results of very careful and thorough engineering work in tests in order to find out what the best methods are. Our work in this connection is not wholly confined to new construction work, but also to maintenance. We have another handbook here which deals with the replacement and reinforcement of poles. It is based on actual tests of poles.

A. This last exhibit enables the associated companies to make their replacements of poles on a consistent and economical basis, adopting the replacements to the conditions of load to which the pole is

subjected. We have also done a great deal of work dealing with the reinforcing of the butts of the poles, prolonging their life after they have rotted at the ground line up to the point where it
631 would no longer be safe to maintain them in the system, the methods by which they can be reinforced and their life exended. There are hundreds of different specifications that have been prepared by this department of the General Staff, covering various types of outside plant or materials. And they form the basis on which practically all the outside plant materials are purchased by the associated companies, and they cover the methods followed in building the outside plant.

Q. Has anything been done on disturbances from high tension wires?

A. There certainly has.

Q. Just outline that.

A. I might say at the beginning that the telephone is the most delicate and sensitive instrument known. I mean by that, it operates on the most feeble currents. The voice currents are the smallest known to the electric art. The energy at the receiving end of an ordinary telephone line is one two-millionth of the energy necessary to light a sixteen candlepower lamp. The energy necessary to create an audible sound in the telephone is about one millionth of that. So you can see what is necessary—that is right—one millionth of one-two-millionth. In the early days, even before the introduction of the electric light, the telephone lines were subjected to mysterious disturbances, cracking and snapping sounds. The introduction of the electric light so multiplied these disturbances that a remedy had to be found or the extension of the telephone system would have been impossible. The General Staff has worked for years on that subject. By using two wires instead of one, and by transposing wires in the open wire lines, and by twisting them together in the cables,
632 a great step was made toward maintaining lines quietly——

Q. What do you mean by transposing?

A. Interchanging the position of the wires, so that two wires coming along to the transposition pole are interchanged so that the wire that is now nearer to me than to you, beyond the transposition pole, will be nearer to you than to me, and the other wire will come on my side.

Q. Would they come in contact in crossing?

A. No. They have to be kept apart, insulated. But that interchange is what we term transposition. With every new development in the electric light, power and railway field, these troubles have tended to increase, and it has required constant work of a large section of the engineering staff to maintain the improvements in our circuits necessary to keep our lines quiet. There are many unsolved problems at the present time, but the situation generally is well in hand, and it has been of vast benefit to the associated companies. Closely associated with this question of disturbance from induction is the question of electric hazard, and it has been necessary to attack the development of this situation in two ways. One was the development of special protective apparatus to be placed

at the subscriber's premises; and also by devising and establishing proper methods and rules for outside construction so as to avoid as far as possible the trouble at its source. I might mention one kind of trouble we have run into which I think would be interesting to the Commission, and that is the trouble brought about by induction—the single phase alternating current electric railway. The first use on any large scale produced violent disturbances on telephone lines. Lines that were five miles away from this
633 railroad were put out of business. The highly balanced underground cable in conduit under the highway along the side of the railroad had voltage enough induced on the wires to run an ordinary electric light and telegraph circuits on poles along the railroad right-of-way had voltage enough induced on them to kill a man.

Mr. Frank:

Q. At what distance apart were the wires?

A. Probably twenty or thirty feet.

Q. The wires up in the air had enough electricity on them to kill a man?

A. Yes.

Commissioner Bean:

Q. Where did this happen?

A. On the New York, New Haven and Hartford Railroad, between New Haven and New York. It presented a grave situation for the company operating in that territory. It threatened to put a large portion of their plant out of business. The General Staff took up that problem. It was recognized as not only vital to this associated company but it would be to other companies; and methods were developed to bring these voltages under control. The General Staff in this connection employed several railroad experts to co-operate with our own experts. In fact, the leading engineer on this kind of railroad electrification was brought over from England in order to help us. We finally worked out a method which has involved the rearranging of circuits of the railroad company to a certain extent. It is giving promising results, and the railroad has been co-operating with us in reducing that. It has relieved the associated company in that neighborhood from a large part of the disturbance. Some time ago the Pennsylvania Railroad decided to adopt this system in its electrification, starting out from Philadelphia
634 and before going ahead, they took up in advance with our General Staff the work they proposed to do, and we worked out with them a method whereby they could introduce this system so as to create the minimum disturbance to the plants of the associated company in that territory. This work has all been done and is available to the Southwestern Company when any railroad in this territory decides to adopt this system of electrification. In handling this branch of our work one important point has been brought out. I am differentiating now from a railroad case and a

general case of interference or interference from electric light and power circuits. The work on behalf of the telephone company is concentrated in the General Staff and we are in a position to act for all the associated companies. The electric light companies can work together only through their associations, which meet infrequently. Just before leaving I was reading the last number of the Bulletin of the National Eelectric Light Association, in which is a report of their Committee on Overhead Lines and Inductive Interference, and in the course of their report they make this statement, which I think is interesting. In this connection they say: "The advantages gained by the telephone and telegraph companies in having their interests represented by the same engineers, no matter where the issue arises, are great." I think this is a tribute to the work our Staff is doing for the associated companies, from another branch of the work. I think they feel if they could have an organization like this it would be of great benefit to their engineers. We have been working for a great many years with the associations
635 of the electric light and electric railway companies, and we have produced standards for crossings and for the joint occupancy of poles, and we have worked with the American Electric Railway Association in bringing about proper standards for joint use of poles involving railway wires. A large work has been carried on recently in the State of California. California has more high-tension power lines than any other state in the Union, and the associated company out there met with a great deal of interference from these high-tension power lines. A difficulty arose in their territory which came to the attention of the State Commission, and a committee was formed composed of representatives of the Commission and the power companies, the telegraph companies and the telephone companies, and for a number of years that committee has been studying this question of inductive interference and the best methods of minimizing interferences due to these high-tension power lines. The telephone part of this work has been entirely directed by representatives of our General Staff. We have had one man who has been living on the Pacific Coast five years, studying this problem. Other members of our department have made frequent trips out there. One of our engineers has just returned after a nine months' stay, working on this problem. A report has already been issued by the Committee, and a second one is about to be issued. A vast amount of data has been accumulated, and it is available for all of the associated companies. That work is of great importance to the whole country, because we all realize that the different utilities have got to live together, and it is only by co-operation and
636 by a study of the causes of these troubles that the different utilities can get together and establish types of construction so that they can exist side by side with the minimum amount of interference.

M. Frank: Does the Southwestern Bell Telephone Company—is it saved from the trouble and expense of making these experiments?

A. Wherever they have interference on their telephone lines from high tension lines they are provided with all the latest information,

and whenever they call a representative of the general staff who is skilled in that matter will come out and give them the best advice as to how to eliminate that trouble.

Q. Tell about protective devices, and the National Board of Fire Underwriters.

A. There has been ever since the electric light and power lines were introduced a continuous line of development work, to work out and have available for the associated companies types of protectors that are necessary to cut off the high tension current in case the high tension wires became crossed with the telephone wires. A complete discussion of that would take a very long time, and I think it is only necessary to say that we have kept pace with the advance in the electric art in the method of protecting our substations. An important line of work in connection with the subject of national standardization is the work we do in keeping in touch with the National Electric Code of the National Board of Fire Underwriters. This code is amended every two years. It prescribed rules and methods to be followed wherever electrical construction is undertaken which might affect the fire hazard insured by any insurance company in the United States. A branch of our General Staff is
637 continually following this code, and studying all the developments pertaining to it that would affect the plant and development methods of the associated companies so as to be ready at the proper time to lay before the national committee any facts and arguments necessary to guide them in their work respecting matters affecting the interests of the associated companies. We co-operate harmoniously with the insurance authorities and the other national bodies so as to produce a reasonable set of rules with a minimum of hardship to the associated companies. From the nature of the case we cannot value what that service might be worth to the Southwestern Company, but I do know that it is of great benefit to them and to the other associated companies.

Q. Has the general staff conducted any experiments to try to obviate the difficulties of the associated companies, that they might get into, on account of electrolysis?

A. Yes; for a great many years we have given attention to that subject.

Q. What is electrolysis?

A. Electrolysis is a term applied to the destruction of underground metallic structures by the return current from railway traction systems. It affects the underground cables of the associated companies. It has been given much study by our Staff and from time to time we have advised the associated companies as to the best and most effective methods of minimizing that trouble. A few years ago one of our engineers visited England and the Continent of Europe to investigate their methods of electrolysis protection in order that we might make such applications as were good to the plants of the associated companies in this country. We have devised methods of bonding cables, which has been very effective. It takes care
638 of this street railway current after it gets on our cables. The danger is caused where this current leaves the cable and goes

into the earth. It removes the lead sheath from the cables and causes deep indentations and pits in it and finally makes an opening in the sheath whereby the water can enter the cable. At the present time there is important work going on looking to avoid this trouble at the source by minimizing the extent of the potential through the earth in the plant of the street railway companies themselves. That work is being handled through what is known as the American Electrolysis Committee, where the representatives of the utilities are getting together and studying the subject. Our general staff has representatives on that committee, co-operating with the other utility representatives, and that committee will represent all of the associated companies, so that they are relieved from it and do not have to worry or think anything about it.

Q. You spoke of the insurance department of the General Staff. Tell what work is done by that department.

A. The American Company maintains an insurance department for the benefit of the associated companies. In co-operation with our general engineering staff this insurance department has worked out standard arrangements and types of construction for telephone buildings, and standards for the maintenance and inspection of these buildings, so as to reduce the fire risk and insurance rates to a minimum and insure the safety of the telephone service and of the employes. Their work extends into the study and recommendations as to the kinds and quantities of fire-fighting apparatus and
639 studies of the best types of fire extinguishers. Inspections of the buildings of the associated companies are made from time to time by the insurance department and advice given as to improving conditions if any defects are found. This is done by the headquarters organization for the associated companies. The insurance department has also made available for the associated companies standard forms of fire insurance policies which offer better protection to the property than did the various forms previously used.

Chairman Busby:

Q. Are you able to induce the insurance companies to change their forms to meet the requirements of the telephone companies?

A. Yes; they have made several forms for the telephone companies' buildings and equipment. As a result of that, there have been considerable reductions made in the insurance premiums paid by the associated companies, so that in 1915 the average insurance rate which the associated companies paid was less than fifty per cent of what they paid in 1910. I don't think the work of this department has been wholly responsible for all that reduction. There have been other factors at work, but a substantial reduction has been made, and undoubtedly the work of this insurance department has been a large factor in it.

Mr. Rhodes has prepared three exhibits, the first of which cites some cases of work on hand with the General Staff; the second of which contains instances of work completed by the General Staff; and the last of which contains the titles of some of the circular

letters and specifications that have been prepared for the associated companies. These exhibits were introduced in evidence as
640 Exhibits 19, 20, and 21, respectively, and are as follows:

RHODES' EXHIBIT 19.

Some Cases of Work on Hand.

Outside Plant Matters.

Study of possibilities of reinforced concrete poles.

Investigation of the economy of latticed steel poles.

Periodic inspection of experimental installations of poles treated with various perservatives and by different methods.

Development of a fungus testing pit for rapidly determining the efficiency of materials and methods to be used in the preservation of timber.

Development of a new aerial type of No. 22 B. & S. gauge cable.

Preparation of specifications for high strength toll aerial cable lines.

Determination of best method of terminating paper insulated cables at central offices or inside buildings.

Improvement in outside distributing terminals.

Development of improved and cheaper type of protected cable terminal.

Large cable terminals for use inside buildings.

Studies of possible modifications and economies in standard line construction for use where weather conditions are not severe.

Study of construction to be proof against very severe storm conditions.

Revision of specifications for exchange aerial construction.

Connecting sleeves for copper wire.

641 Revision of instructions governing the use of dynamite.

Investigation of alternative forms of insulator pins.

Tests of various new types of guy clamp.

Investigation of the merits of dry galvanizing for use on pole line hardware.

Investigation to determine the best materials and methods for insulating joints in rubber covered wire.

Investigation in insulated wires used in outside plant.

Improvements in insulated wires used in interior locations.

Preparation of revised bulletin on electrolysis.

Investigation of the comparative economies of different materials used for supporting aerial cables.

Revision of notes on cable plans to cover best practice in laying out of cables, in relieving existing cables or making extensions into new territory.

Transmission and Protection Matters.

Development of apparatus and methods for use in transmission maintenance.

Investigation of transmission losses in subscribers' loops.
Investigation of transmission losses caused by multiplying trunk circuits.
Study of the characteristics of speech.
Development of improved operator's telephone set.
Investigation of the life of paper condensers.
General study of telephone transmitters.
General study of telephone receivers.
Development of improved sub-station circuits.
Development and application of loud speaking apparatus.
642 Development of improved types of line insulators.
Revision of bulletin on loading of telephone circuits.
Revision of bulletin on transmission equivalents.
Use of auto transformer for the reduction of reflection losses.
Further development of very long distance telephony.
Revision of practices in the loading of toll entrance cables.
Development of high dielectric strength underground cable for special use.
General studies of the electrical design of cables.
Design and development of submarine cable and associated apparatus for connecting Florida and Cuba.
Development of telephone repeater apparatus and improved arrangements for the application of telephone repeaters to various classes of toll service.
The engineering of telephone repeater equipment for various specific installations.
Development of apparatus and method for adjusting the capacity of loaded cables for repeater operation.
Engineering work in connection with the production and distribution of loading coils, large guage cables and telephone repeaters.
Development of systems of co-ordinated transpositions for parallel power and telephone circuits.
Investigation of various specific cases of inductive interference.
Preparation of bulletins for Associated Companies, giving information regarding transpositions.
Determination of the effect of noise on the intelligibility of telephone conversations.
643 Co-operative investigation with railroad engineers of means for reducing voltages induced by alternating current railroads.
Investigation of the requirements for telephone and telegraph working in long cables and the development of the necessary apparatus and methods.
Improvements in composite telegraph systems.
Study of wireless telephone and telegraph matters.
Studies of conditions in balancing the cost and transmission of the different parts of telephone circuits and apparatus.
Development of a portable source of multi-frequency currents.
Transmission work in connection with telephone and telegraph facilities required by the U. S. Government, particularly for the use of the army and navy.
Further development of improved phantom repeating coils.

Further development of improved loading coils and loading coil cases.
Development of new types of loading units for phantom loading.
Induction and retardation coil redesign.
Investigation of the magnetization of loading coils.
Preparation of bulletin on protection against foreign potentials.
Redesign of protectors for cable boxes.
Development of apparatus for protecting private branch exchanges.
Improved open space cutout for substation protection.
Improvement of fuses for protection against foreign potentials.
644 Improvement of transmission efficiency of central office heat coils.
Test of filters as lighting protectors.

Central Office Equipment.

Revision of standardization of central office equipment covering the following items:

Switchboard sections No. 2 Toll, No. 1 Toll.
Power Plant Equipment.
Cabling.
Numbering.
Installing.
Inspection and Test Out.
Cable Turning Sections.
Switchboard Platforms.
Building Maintenance and Operation.
Building for Semi-Mechanical Switchboards.
Reducing Cost for Power Plant at Small Offices.
Standardization of Cable Entrances.
New Type of Switchboard Cable.
Improved Wire Chief's Desks.
Improved Water-proof Switchboard Plugs.
Improvements in Small Common Battery Switchboards.
Common Battery Circuits for Use in Duplex Cable for Toll Service.
Small Toll Ticket Distributing System.
Testing Circuit for Machine Ringing "A" Cords.
Composite Ringer Testing Set.
Improved Method of Terminating Phantoms.
Duplex Cabling No. 4 Toll Test Board and Toll Circuits.
645 Circuits for Northern Pacific Railway.
Improved No. 2 and No. 10 Toll Cords.
Development of Step-up Transformers for Ringing.
Development of Looping Bridge Circuits.
Use of Inequality Ratio Repeating Coils on Toll Circuits.
Toll Service Observing Circuit for Repeaters.
Electrical Requirements for Central Office Apparatus.
Fuses for Toll Switchboards..
Improved Double Pulley Cord Weight.

Improved Single Pulley Cord Weight.
Centralized Testing at Multiple Office Districts.
Emergency Ringing and Battery Current Supply.
Automatic Routine Test for Testing Subscribers' Lines.
Test Panel for Private Lines.
Insulation Resistance of Switchboard Cables When Affected by Moisture.
Repairmen's Spot Light.
False Signal Studies.
Improved Composite Ringer Circuit.
Testing Circuits for Recording Cords and Toll Cords, having third wire supervision.
Audible Signal for Use with Answering Supervisory Lamps.
Cord Circuit for Prevention of Registering Abandoned Calls.
Securing Busy Subscribers' Lines on Toll Cords and Verifying Busy Reports.
Alarm Circuit for Message Register Machines.
Ringing Alarm for No. 10 Offices.
Multiple No. 6 Private Branch Exchange.
646 Interrupter Segments.
Standardization of Pay Station Equipment.
Grouping Arrangements at "B" Positions.
"A" Operators' Cords to Give Busy Tests on Trunks.
Use of Sub-Station Message Registers at Private Branch Exchanges.
Improved Cordless Private Branch Exchanges.
Fire Alarm Systems.
Tripping Relay Adjustment.
Relay for Reverting Busy Test Circuit.
Electrically Operated Peg Count Apparatus.
Investigation of Resistance Materials.
Protection of Tripping Relays.
Improved Line of Automatic Keyshelf Braces.
Glass Window for Message Register Dust Caps.
Improvements in No. 84 Type Interrupters.
Phantoming of Rural Lines.
Improved Ringing Relay.
Improved Monitoring Arrangements for Toll Desk Operators.
Improved Two-Number Trunks.
Prevention of False Ringing on Short Toll Lines.
Combination Local and Toll Trunks.
Protection of Auxiliary Signal Relays.
Improved Universal Key and Key Base Complete.
Improved Key Buttons for Mechanically Locking Keys.
Improved Key Buttons for Call Circuit Keys.
Blockade Alarm Device for Pneumatic Tubes.
Non-ring Through Cord Circuits.
Improved Switchboard Lamps.
Floor Push Transmitter Cut-off.
Switchboard Cord Protector.
647 New Telephone Set Plug and Jack for Operator's Position.
Improved Lamp Socket Mountings.

Improved Lamp Caps.
Investigation of Speed and Voltage Regulators.
Generators for New Ringing Systems.
Electrical Starting Equipment for Gas Engines.
Investigation of More Economical Gas Engines.
Pressure Equalizers for Gas Engines.
Operating Routine and Equipment for Telegraph Batteries.
Improvements in Charging and Ringing Machines.
Through Toll Line Circuits.
Ringdown Toll Line Circuits.
Improved Cord Pulleys.
Punched Frame Jacks.
Improved Power Plant Circuits for Common Battery Switchboards.
Investigation of Best Methods of Running Power Leads to Avoid Battery Noises.
Central Office Ground Leads.
Methods of Making Central Office Grounds.
Improved Systems for Furnishing Message Register and Coin Collection Current.
Automatic Cell Fillers for Storage Batteries.
Paints for Battery Rooms.
Regulation of Central Office Battery Voltage.
Bearings and Power Transmission for Semi-mechanical Equipments.
Standardization of Mercury Arc Charging Rectifiers for Branch Exchanges and Telegraph Batteries.
Parallel Operation of Mercury Arc Rectifiers.
Improved Mechanically Locking Keys.
Narrow Base Key for Manual Ringing Trunks.
648 Improved Peg Count Register Key.
Gauge for Bent Switchboard Plugs.
Semi-Hard Black Rubber Lamp Rails.
Fibre Faced Jack Spaces.
Improved Glass Bulletin Holders for Toll Key-shelves.
Improved Signalling System for Toll Lines.
Vacuum Tube Repeater Cord (Inductive).
Vacuum Tube Through Line Repeater Cord (Inductive).
Vacuum Tube Repeater Cord (Non-Inductive).
Vacuum Tube Through Line Repeater (Non-Inductive).
Mechanical Through Line Repeater Cord (Non-Inductive).
Mechanical Repeater Cord (Inductive).
Emergency Repeater Cord.
Loud Speaking Equipment for Communication Between Testmen and Framemen.
Routine and Equipment for Handling Trouble Reports and Certain Associated Work.
Telephone Repeaters for Associated Companies.
Miscellaneous Patents and Inventions.
Revision of Circuits to Permit Use of Multiple Line Signals.
Modified Toll Cords for Outward Single Ticket Positions.
Network of No. 8 Gauge Circuits, Equipped with Telephone Repeaters Connecting All Important Cities in the United States.

Signaling System for Morse Circuit Attendants.
Investigation of Composite Sets.
Recall Signal for No. 601 P. B. X. Trunks.
Study of Means of Simplifying and Cheapening Equipments
649 and Signaling Features of "22" Type Repeaters.
Development of Looping Bridge Circuits.
Development of New Type of Test Panel.
Development of New Toll Cord Circuits to Replace the Present No. 2 and No. 10 Toll Cords.
Development of Step-up Transformer to Increase the Voltage of Ringing Current at the Toll Operator's Position.
Use of Inequality Ratio Repeating Coils in Toll Circuits.
Development of Two-Number Toll Circuits.
Combination Local and Toll Trunk Circuits.
Combination Ringdown and Recording Trunk Circuits.
Grouping Facilities for Toll Call Wire Circuits.
Special Testing Equipment for Long Distance Offices.
Circuit for Testing Busy Signals in Toll Boards.
Development of Trunk for Use Between Toll-Board and Local Information Desk.
Circuits for Testing Line Relays in Toll Circuits.
Development of New Monitoring Circuits for Use at Desks in Toll Offices.
Prevention of False Rings on Short Toll Lines.
Centralized Testing Apparatus for Testing Telephone Cables.
Development of Universal Toll Cord for No. 601 P. B. X.
New Recording Circuits.
Toll Operators' Telephone Sets for Monitoring on Toll Connections.
Two-way Ringdown Trunks Arranged for Morse.
650 Magneto Switchboard No. 105-A. Telephone Set Arranged for High Impedance Monitoring.
Improved Supervisor's Trunk Circuit No. 1 Toll Switchboard.
Design of a Jack Cleaning Attachment to Plug Polishing Machine.
Modification of the Nos. 4 and 5 Types of Toll Supervisors' Sets.
Change in Design of Nos. 109 and 110 Plugs to Reduce the Length of Shoulder at Heel of Plug.
Celluloid or Mica for Windows of No. 42-A Signal Mountings.
Mounting for Grouping Key and Emergency Call Circuit Key.
Silk Covered Enameled Jumper Wire.
Improvement in Answering Jack Number Plates.
Revision of Shop Requirements on New Jacks and Plugs.
Gauges for Testing No. 92 Jacks.
Reduction in Cost of Platinum Contacts.
Prevention of Ringing Subscribers in Error in Magneto Offices.
Development of Magneto Switchboard with Combined Drops and Jacks.
Development of Small Unit Type Magneto Switchboard.
Improved Service Observing Plug.
Bulletin Holder for Toll Keyshelves.

Redesign of No. 32 Lamp Socket for Pilot Signals.
Repair of Switchboard Cords at the Switchboard.
New Design of Trunk Designation Strip.
Improved Trunk Operator's Telephone Set Circuit.
651 Improvements in Machine Ringing Cords and Trunks.
Message Register Maintenance.
"A" Position Switchboard Clock Circuits.
Tandem Switchboard No. 1 Circuits for Use With Phantomed Cable Circuits.
New Series of Operating Room Desks.
Improvements in Methods of Multipling Line Signals.
Improved Long Outgoing Trunk Circuit.
Revision of Standard Drawings to Employ New Types of Apparatus.
Investigation and Standardization of Methods of Supplying Current for Private Branch Exchange Under Different Conditions.
Improvements in Wiring Incoming Call Circuits.
Circuits for Giving Toll Service in Private Branch Exchanges.
Ringing Interrupter Operated from Central Office Storage Battery.
Preparation of Handbook of Information Covering Private Branch Exchanges.
Development of Standard Order Table.

Sub-station Equipment.

Steel Desk Stand with Permanent Bower Bariff Finish.
Standardization of Practices for Installing and Maintaining Sub-Station Equipment.
Change in Constructioon of Standard Dry Cell.
Moistureproofing of Standard Desk Stand Cord.
Investigation of Durability of Enamel in Comparison with Silk and Cotton as Insulation for Wire.
652 Development of New Four-party Selective Ringing System.
Design of Telephone set to Be Held in the Hand.
Further Investigation of Efficiency of Telephone Circuits and Apparatus of foreign manufacture.
Improved cases and caps for sub-station receivers.
Investigation of Changes in standard sub-station ringer.
New operator's head receiver.
New and improved mouthpiece for sub-station transmitters.
New Auxiliary Receiver.
New Method for Refinishing Repaired Desk Stands.
Further Investigation of dry cells on the market.
Further Investigation of Devices on the Market Intended to be Attached to Subscribers' Telephones.
Light Compact Test Set for Use of Telephone Maintenance Men.
Loud Speaking Receiver and Associated Circuits and Apparatus.
Standard Fastener for Securing Inside Wire to Walls, Desks, etc.
Further Investigations of Western Electric Company's Product of Receivers and Transmitters.
Apparatus and circuits for Distributing News and Music by Telephone.

New Sub-station Receiver.
New Substation Transmitter.
More Durable Finish for Transmitters.
More Substantial Housing for Multi-Coin Collectors.
Desk Stand Bases with Longer Life for the Felt.

653 Special Sub-Station Equipment to Reduce Noise at Sub-Stations on Telephone Lines Exposed to Induction from Nearby Electric Light and Power Circuits.

Further Development of Special Equipment to Be Furnished by the Associated Companies for the Use of the U. S. Government in Coast Guard service.

New Relay for Four-Party Selective Sets

Further development of telephone equipment to transmit speech to large public gatherings.

High Tension Interference, Electrolysis, etc.

General study and investigation of high tension intereference conditions.

Intereference from high voltage, direct current railways.

Resonant bridge for grounding circuits used as primaries of compensating transformers in connection with single phase railroad induction.

Dangers from joint use of conduits for power and telephone wires.

Operating and Traffic Engineering.

Development and Standardization of Improved Local Operating Practices.

While much work has been done on this subject, a force of men is kept continuously at work keeping the methods up to date and developing improved methods.

Attention has also been given from time to time to training school methods and equipment. This work will eventually involve the development of teachers' courses, the writing of text books, and lesson books of various kinds to meet different conditions.

Work is continuously in progress in connection with directory information work, developing methods and records, and de-
654 termining the different kinds of information which should be given to the public.

Work is also in progress on the following subjects closely related to the standardization of local operating practices, and information has been issued from time to time based on the results of the studies that have so far been made.

Operation of private branch exchanges.

Handling service criticisms.

Instructions governing the reading of central office message registers.

Handling trouble reports in connection with improved trouble equipment.

Recording busy calls for report to the commercial department.

Operation of message rate service with substation registers.

Assignment of line numbers.
Improved multiple marking materials and method of application.
Analysis of overlapping and sequence of operations.
Special equipment features, such as ringing induction, audible busy signal call circuit grouping devices, etc.
Development of methods in connection with the operation of No. 1-C switchboards.
Development of methods for manual switchboards with call distribution and semi-mechanical switchboards with and without call distribution.
Investigation to determine the most efficient and satisfactory arrangement of caring for the operators' street clothing, etc., while they are on duty.
655 Investigation of the possibility of obtaining an improved type of lamp cap for keyboard signals.

Development and Standardization of Improved Toll Operating Practices.

Another force of men is continuously at work developing improvements in the standard toll operating practices. Much work has already been done and in addition bulletins are in the course of preparation which will standardize improvements in the following methods and subjects:
Methods for handling long built-up connections.
Information work.
Methods of handling calls for toll rates.
Methods of handling delayed toll calls.
Methods of handling requests for reports on uncompleted toll calls.

Standardization of Toll-operating Rules.

In addition to the work of this kind already completed, the following bulletins which contain the detailed instructions governing the work of toll operators are in the course of preparation:
Code symbols and reports.
Toll tickets and their use.
Obtaining called station.
Obtaining called party.
Completing connection.
Timing and supervising.
Clearances of circuits.
Handling delayed calls.
Special classes of calls.
Handling tributary traffic.
656 Two-number toll board calls.
Information calls.
Instructions to Supervisors.

Improvements in Standard Traffic Engineering Practices.

A force of men is also at work continuously keeping up to date and developing improvements in standard traffic engineering practices.

Standardization of Equipment for Attended Pay Stations.

Studies to determine economical line of division between the handling of short haul toll calls by the "A" operators and the handling of these calls by the toll operators at separate toll board.

Improved signaling methods over open wire toll lines.

Studies looking to further economies in the adjustment of the operating force to the traffic.

Improved toll cord circuits to give even better supervision.

Further improvement and extension of significant traffic records.

Investigation looking to further improvement in toll service and the efficiency of use of toll plants.

The development of a mechanical distributing system for carrying tickets from toll recording positions to toll line positions.

The development of timing devices for use at recording boards.

The development of improved methods of lighting operating rooms.

657 Improved methods for handling extremely long haul traffic.

Improved operating and equipment arrangements for handling the traffic of tributary offices.

Work is also on hand for about 300 other subjects.

RHODES' EXHIBIT 20.

Some Instances of Work Completed.

Outside Plant Matters.

Preparation of rules governing the economical maintenance replacement of poles.

Consideration of Northwestern Cedarmen's Association specifications for cedar poles.

Development of specifications for western cedar poles.

General investigations of the preservative treatment of poles and crossarms and of various preservative compounds.

Study of relative economies of treated and untreated poles for use in different sections of the United States.

Analysis of creosote recovered from poles in service and study of changes in the creosote with a view to improving our specifications.

Revision of specifications for creosote and carbolineum.

Development of new method for attaching aerial cables to their supporting strands by metal rings.

Revision of standard specifications for No. 19 and No. 22 gauge cable.

Modifications of standard methods of aerial cable construction.

Determination of the most economical electrostatic capacity for all sizes of loaded cables.

Development of 1,200-pair cable.

658 Development of 900-pair cable.

Development of 300-pair submarine cable.

Developing improved methods for splicing submarine cable.

Introduction of antimony lead alloy for cable sheaths.

Preparation of standard handbook of exchange aerial construction methods.

Determination of proper construction to employ at crossing points of telephone lines over railroad right of way and standardization of this construction with committee of railway telegraph superintendents.

Study of the extent and range of each sleet storm in the United States that has seriously affected the telephone plant.

Inspection and study of line breaks to determine what changes, if any, should be made in standard specifications to reduce trouble of this kind.

Development of cheaper type of twisted pair rubber covered outside distributing wire.

Determination of proper requirements for insulation resistance for outside distributing wire and for inside wire for substation use.

Standardizing best type of rubber covered wire for potheads.

Development of a small, non-hygroscopic, flame-proof wire for use on cross-connecting frames.

Development of pothead sealing compounds.

Determination of proper method for installing and connecting aerial leading coils.

Development of method for making phantom circuit transpositions.

659 Development of methods for making pole pair phantom transpositions.

Standardizing methods of long span construction for open wires.

Development of electrolysis bond relay.

Development of an improped method for testing galvanizing on iron and steel.

Developing improved strain insulators for pole guys.

Improvement of strain insulators with respect to insulation.

Design and specifications for tool box for cable splicers and small maintenance gangs.

Revision of specifications for vitrified clay duct to enable the utilization of a greater proportion of the total factory output with saving in cost.

Standardization of hall terminal for use inside of buildings.

Development of methods for reinforcing pole butts.

Efficiency tests of commercial forms of patent guy anchors and selection of the most servicable forms for standardization.

Development of cheaper crossarm brace.

Development of standard specifications for underground conduit construction embodying improved practices.

Investigation resulting in reduction in diameter and cost of standard underground and aerial cables.

Standardizing methods of installing underground cables.

Development of trouble locating and test sets for cable repairmen and cable splicers.

Revision of specifications for splicing cables to cover new and improved methods.

660 Determination of best methods for making joints in iron wire.

Standard specifications have also been prepared for over 200 items of outside plant material.

Transmission and Protection Matters.

Interference to telephone lines from high-speed telegraph circuits.

Interference from high-tension transmission lines having grounded neutrals.

Experimental determination of crosstalk on transposed lines.

Preparation of a bulletin on noise and inductive disturbances.

Transmission losses, common and local battery sets.

Special transmission facilities for banquets.

Determination of reflection losses.

Dielectric losses in paper cable.

Determination of attenuation and reflection constants of loaded cable.

Development of duplex cable.

Experimental determination of possibilities of telegraph through cables.

Design of submarine loading coils and pots for loading 3 important submarine cables.

Design and development of cable and loading coils, underground system between Boston and Washington.

Development of improved condensers.

Improvement of insulation of open wire circuits.

Portable bridge for measuring the impedance of telephone circuits and apparatus with high frequency currents.

661 Systems of transpositions for phantom circuits.

Loading No. 8 gauge circuits.

Investigation of vacuum arresters for telephone protection.

Transposition system for joint telephone and telegraph lines.

Determination of resistance limit for central office ground.

Phantoming of loaded circuits.

Use of amplifiers in telephone measurements.

Development of transmission measuring set for routine use.

Development of telephone repeaters for commercial use.

Special field trial of long distance wireless telephone and telegraph.

Development of phantom circuit repeating coils.

Studies of phantom loading coil design.

Development of equipment for phantoming rural subscribers' lines.

Improvement in terminal cables for duplex loading coil cases.

Studies of special irons for use in loading coil cores.
Development of improved induction coils.
Development of autotransformers for duplex circuits.
Development of test sets for measuring alternating current constants of coils in the field and for demagnetizing magnetized coils.
Development of improved repeating coils having high stability and high-grade ringing and transmission efficiency.

662 General development of improved types of loading coils and pots for use on open wire lines, large gauge cables and small gauge cables.

Development of coils for composite sets.
Development of coils for polar duplex sets.
Development of coils for Morse generator taps.
Development of shielded phantom repeating coils.
Field experiments on improved sub-station protector.
Improved alarm fuses.
Improvement of central office heat coils.
Improvement of fuses used for sub-station protection.
Redesign of central office main frame protector.
Development of methods for cleaning carbon protector blocks so as to reduce cost of maintenance.
Transmission improvement of heat coils for magneto offices.
Development of protective apparatus for use on telephone lines leased for the operation of foreign signaling systems.
Development of method of entering exposed cables to buildings.
Study of question of grounding aerial cable sheaths.
Preparation of bulletins on transmission equivalents.
Development of improved compensating transformers.
Development of apparatus and methods for detecting abnormal resistance at heat coil contacts and for reducing such resistance.
Preparation and distribution of handbook of standard transposition systems.

663 Co-operating with engineers of New Haven R. R. and Westinghouse Co. in reducing interference from electrified railway.

Application of compensating transformers to telephone circuits for the purpose of reducing electromagnetic interference from paralleling single-phase railway systems.
Regulator for potentials of ground connections.
Preparation and distribution of a set of notes on transmission maintenance.
Preparation of bulletin on loading telephone circuits.

Central Office Equipment.

Improved Switchboard Section (No. 92 Jack "A" Section).
Improved Switchboard Section (No. 49 Jack "A" Section).
Improved Switchboard Section (No. 92 Jack "B" Section).
Improved Main Distributing Frame.
Improved Intermediate Distributing Frame.
Improved Relay Rack.

Improved Coil Rack.
Improved Fuse Panels.
Improved Message Register Racks and Casings.
Improved Miscellaneous Equipment Practices.
Improved Miscellaneous Installation Practices.
Auxiliary Framing for Frames and Racks.
Location of Rolling Ladders.
Standardization of Switchboard Wiring and mounting of Apparatus for Central Office Equipment and Private Branch Exchange Equipment.
Improved Keyless and Machine Ringing Trunks.
664 Improved Toll Cord Circuits—to Overcome Transmission Losses.
Improved Circuits for Call Wire Toll Lines.
Improved Toll Switchboard Section.
Improved Switchboard Cord Weight.
Improved Switchboard Plug Shelf.
Improved Switchboard Cord.
Improved Method of Switchboard Lighting.
Improved Mounting for Central Office Protectors.
Improved Private Branch Exchange No. 4.
Improved Switchboard Plug.
Combined Ringdown and Recording Trunks.
Design of Fire Screens for Switchboard Sections. Determination of Limits of Wear for Switchboard Plugs and Jacks.
Standardization of Gas Engines.
Design of More Economical Condenser.
Design of Multiple Private Branch Exchange.
Study of Comparative Economics from the Use of Gas Engines as Compared with Electric Motors, Defining the Proper Field for Each.
Improvement in Storage Batteries.
Standardization of Method of Adding Plates to Storage Batteries.
Standardization of Central Office Power Machines and Accessories.
Investigation of Mercury Arc Rectifiers for Charging Storage Batteries.
Standardization of Flameproof Distributing Frame Wire.
Improved Pole Changer.
Standard Floor Plan Arrangements for Telephone Buildings in Single Office Districts.
665 Standard Floor Plan Arrangements for One-Unit Telephone Buildings in Multi-Office Districts.
New Line and Cut-Off Relay.
Improved Supervisory Relay.
Switchboard Clock for "A" Positions.
Standard Specifications for Repaired Material.
Modified Nos. 38, 39 and 40 terminal strips.
Method of Wiring Condensers in Toll Cord Circuits.
Cost of Private Branch Exchange Equipment for Receiving and Delivering Telegrams.
New Transmitter Arms.

Improved No. 4 Private Branch Exchange.
Circuit for Grouping "A" and Toll Switching Positions.
Changes in Equipment and Arrangement of No. 1 Trunk Switchboard Keyshelves.
Changes in Nos. 5 and 23 induction Coils.
Alarm Signal for Main Discharge Fuses.
New Design of the No. 65 Terminal Strip for Horizontal Side of Main Distributing Frames.
Method of Handling Toll Calls from New Type Prepayment Multi-Coin Boxes.
Use of Tungsten Lamps for Resistance in Coin Box Trunk Leads.
Revised Specifications for Simplex Sets.
Wiring of the Outgoing Trunk Multiple Directly to the Main Frame and Intermediate Type Terminal Strip for the Main Distributing Frame.
Peg Count Register Key.
New Standard Central Office Message Register—Lock-up Type.
Tools for Removing Worn No. 49 Jack Sleeves.
666 Direct Current Commutating Pole Motors for Charging Generators.
Gauges for No. 92 Jack Sleeves.
Machine Ringing—Premature Operation of Tripping Relays Due to Breakdown of Line Insulation.
Interrupter for 4-Party Selective Ringing.
Specifications for Message Register Generators.
Battery Boxes for Dry Cells. Use of Dry Cells for Centers.
Cord for Suspended Type Transmitter.
Morse Local Battery and Transmitter Local Battery.
Tool for Removing Lamp Caps Mounted on Close Supply Ringing Current Over Cable Pairs to Private Branch Exchanges.
Standard Drop Light Handle on Guard for Use in Operating and Terminal Rooms.
Improved Operators' Telephone Set Cord.
Power Plant Wiring—Omission of Individual Cell Voltmeter Leads to Storage Batteries.
Emergency Plugging-up Cords.
Pick-up Alarm Circuits—Machine Ringing.
Improved Type "A" and "B" Composite Ringers.
Repair of Tinsel Switchboard Cords.
High Impedance Relay for Use in New Toll Cord Circuits.
Testing Circuit for Use in Connection With New Toll Cord Circuits.
Folding Handle for Emergency Hand Generators.
Specifications for Polar Duplexed Telegraph System.
Machines for Cleaning Switchboard Plugs.
Automatic Keyshelf Brace.
Arrangement of Keyboard Lamp Caps and Guards and Pilot Lamp Caps and Guards.
667 Railroad Private Branch Exchange Equipment.
Oil Insulators and Pedestal Supports for Mounting Storage Batteries.

Improved Monitoring Arrangement for Opre-tors' Telephone Sets.
Starters for A. C. Current Motors.
Improved Telegraph Key.
Glass Sand Trays and Glass Covers for Storage Batteries.
Methods of Handling Trouble Reports.
Improved No. 9 Switchboard.
Improved Local and Toll Service Observing Desks.
Specifications for Storage Batteries.
Specifications for the Care and Operation of Storage Batteries.
Mercury Act Rectifiers for Charging Storage Batteries.
Primary Battery for Current Supply for Magneto Switchboards.
Improved Local Test Desk.
Improved Small Magneto Switchboards.
Redesigned 3x7 Cordless Private Branch Exchange.
Private Branch Exchange No. 550-A.
Data for Determining the Proper Size of Storage Batteries.
Improved Ringdown Trunk Circuits for Lines Exposed to Inductive Disturbances.
Improved Signaling for Ringdown Trunks.
Service Observing Circuit for No. 10 Switchboard.
Subscribers' Line Cabling and Jumper Wiring for Four-Party Jack per Station Lines.
Modification of No. 1 P. B. X.'s for Lamp Signals.
Western Union P. B. X. Equipment.
668 Automatic Call Circuit Selecting Arrangements.
Private Branch Exchange Cord Circuits for Use on Night Connections.
Circuits Employing Gang Keys.
Improved Water-Proof Switchboard Cable.
Switchboard Cord Protector.
Automatic Call Filler for Storage Batteries.
High Frequency Generator for Composite Signaling.

Substation Equipment.

Subscriber's set for rural stations.
Compact subscriber's set for hotels.
Portable set intended to be carried on street railway cars.
Standard subscribers' sets of metal construction.
Black finish for desk stands and ringer gongs.
Standard scheme for tracer colors in desk stand cords.
New Design of terminal rack and cord bushing of desk stands.
Improved tinsel conductors in substation cords and other changes in braids and terminals.
Standard keys in housing for mounting at sub-stations.
Standard dry cell for local battery telephones and other telephone service.
Standard gauge for testing dry batteries.
Metal box to contain dry batteries at local battery stations.
Standard multi-coin collector arranged to take nickels, dimes and

quarters for toll and long distance calls on a pre-payment basis.

669 New single coin collector to receive nickels on a prepayment basis.

Investigation of causes of electrolytic corrosion of prepayment coin collector windings in service.

Standard telephone system for high class residences providing inter-communicating service between sets and regular exchange service.

New four-party selective ringing system using superimposed ringing current.

Standard telephone booth with folding doors.

Standard signs for telephone pay stations.

Standard light portable test set for use of linemen.

Standard terminal blocks for making connections to inside wire and cords at substations.

Equipment for ventilating telephone booths.

New Substation receiver.

Standard plates for attaching to telephone instruments.

Arrangements of transmitters, desk stands and subscribers' sets for two concealed transmitter cords.

Standard methods for economically handling transmitters and receivers removed from substations.

Metal telephone booths.

New loud ringing extension bell sets.

Standardization of new spring terminals and standard connectors for dry batteries.

Attachments which may be applied to coin collectors, enabling the collection of the war tax on telephone messages.

Telephone substation equipment of special design for service in mines.

Improvement in design of mouthpiece of operator's transmitter.

670 Standard methods for adjusting ringers.

Waterproof substation cords.

Equipment for giving telephone exchange service to trains at stations and boats at docks.

Mounting for protectors exposed to the weather.

Message register for use at substations.

Mechanical investigation to determine most satisfactory types of labor saving devices for accounting and clerical work.

Improved winding of standard substation ringer.

New finish for breast plates of operators' transmitters.

Development of apparatus for automatically registering the number of telephone calls at coin-collector stations.

Self-locking cash box.

New head band for operator's receiver.

Plug for use in connecting portable subscribers' sets.

Development of special equipment for use of United States Government in Coast Guard Service.

Telephone equipment for transmitting speech to large public gatherings.

Operating and Traffic Engineering.

The development of standard traffic engineering practices for use in connection with building plans.

The development of standard traffic engineering practices for use in connection with central office equipment.

Methods for reducing "B" operating costs during hours of light load.

671 Standardization of operating methods and equipment to facilitate the receipt, forwarding and delivery of telegrams over both local and toll telephone lines, and also to and from subscribers and public telephone stations.

Improved standard methods for equipping and operating rural lines.

Improved methods for making local and toll peg counts, which are essential to the proper engineering of buildings and equipments and the study of operating methods.

Standard methods and equipment for observing local service.

Standard methods and equipment for observing toll service.

Improved traffic reports covering service and operating efficiency.

Economical field of usefulness for multiple answering jacks and lamps.

More accurate determination of the points at which it becomes economical to omit the subscribers' multiple from "A" switchboards.

Study of the arrangement and numbering of trunk circuits and jacks.

Improved arrangement for emergency call circuits.

Design of improved methods and equipment for supervisors, both local and toll.

Design of improved switchboard number plates.

Standardization of a ticket pad holder and a ticket receptacle to facilitate the writing and handling of records of calls at the switchboard.

Design of a switchboard platform to facilitate the work of the operating force.

Design of a chair for use at switchboards.

672 Design of an emergency switchboard equipment, both local and toll.

Development of a switchboard clock for timing toll calls handled at "A" positions.

An investigation of electrically driven and spring driven timing devices for use at toll boards and the development of an improved model of the calculagraph.

The standardization of toll ticket forms.

Standardization of toll switchboard practice in regard to the provision of subscribers' multiple, the use of toll line multiple and the use of toll line busy signals.

Development of complete operating methods and routines cover-

ing the use of toll lines in the Bell System by Independent companies.

Improved system for filing and quoting toll rates.

Investigation of the use of combined line and recording toll operators.

Standardization and Development of Local Operating Practices.

This work covers the whole field of operating practice, and bulletins have already been issued on the following subjects:

Fire Drills for Operating Force.

Multiple Markings and Number Change Bulletins.

Standard Party Line Station Designations.

Handling Calls to Private Branch Exchanges when the Attendant is not on Duty.

The bulletins covering the work of operators at local switchboards were first sent to the Associated Companies as methods. After this work was completed it seemed advisable to prepare a com-
673 plete set of operating practices based on these methods so that they could be readily placed in the hands of the field forces. This local operating practice has been written up in sections covering the following subjects:

674 Division I—General.

Sec. 1. Synopsis.
Sec. 2. Introduction.
Sec. 3. Operators' General Instructions.
Sec. 4. Supervisors' General Instructions.
Sec. 5. Definition of Terms.
Sec. 6. Classes of Service.
Sec. 7. Central Office Abbreviations.

Division II—"A" Operators (and Supervisors).

Sec. 1. Answering Calls.
Sec. 2. Taking and Repeating Orders.
Sec. 3. Local Multiple Connections.
Sec. 4. Manual Ringing.
Sec. 5. Reverting Calls.
Sec. 6. Routing.
Sec. 7. Call Circuit Trunk Connections.
Sec. 8. Tandem Trunk Connections.
Sec. 9. Ringdown Trunk and Built-up Connections.
Sec. 10. Supervising on Signal and Disconnecting.
Sec. 11. Busy Reports.
Sec. 12. Out of Order Reports.
Sec. 13. Slow Answer Calls—Local Multiple Connections.
Sec. 14. Slow Answer Calls—Call Circuit and Tandem Trunk Connections.
Sec. 15. Slow Answer Calls—Ringdown Trunk and Built-up Connections.
Sec. 16. Don't Answer Reports.
Sec. 17. Cancelled and Abandoned Calls.
Sec. 18. Completing Busy Calls.
Sec. 19. Completing Out of Order Calls.
Sec. 20. Completing Don't Answer Calls.
Sec. 21. Completing Delayed Calls.
Sec. 22. Restoring Connections.
Sec. 23. Wrong Number Calls.
Sec. 24. Double Connections.
Sec. 25. Obtaining Better Connections.
Sec. 26. "Bell Rang" Reports.
Sec. 27. Information Calls.
Sec. 28. Multiple Marking Calls.
Sec. 29. Answering Jack Marking Calls.
Sec. 30. A-B Toll Calls.
Sec. 31. Two-Number Toll Board Calls.
Sec. 32. Long Distance Calls.
Sec. 33. Requests for Rates and Charges.
Sec. 34. Calls for Official Lines.
Sec. 35. Emergency Calls.
Sec. 37. Right-of-Way Calls.
Sec. 38. Message Rate Calls, Registered.
Sec. 39. Message Rate Calls, Ticketed.
Sec. 40. Postpayment Coin Box Calls.
Sec. 41. Prepayment Coin Box Calls.
Sec. 42. Attended Public Pay Station Calls.
Sec. 43. Rural Line Calls.
Sec. 44. Miscellaneous Conditions.
Sec. 45. Equipment Trouble.
Sec. 46. Service Criticism.
Sec. 48. Writing Tickets.
Sec. 49. Canceling Tickets.
Sec. 50. Sample Charge Tickets.
Sec. 51. Sample Canceled and Credit Tickets.
Sec. 52. Sample Busy Tickets.
Sec. 53. Sample Out-of-Order Tickets.
Sec. 54. Sample Don't Answer Tickets.
Sec. 55. Sample Delayed Call Tickets.

675 Division III—"B" Operators (and Supervisors).

Sec. 1. Assigning Trunks.
Sec. 2. Establishing Connections.
Sec. 3. Ringing.
Sec. 4. Verifying Numbers and Changing Lines and Trunks.
Sec. 5. Operation of Signals and Disconnecting.
Sec. 6. Multiple Marking Calls.
Sec. 7. Equipment Trouble.

Division IV—Toll Switching Operators (and Supervisors).

Sec. 1. Toll Switching.

Division V—Tandem Operators (and Supervisors).

Sec. 1. Assigning Trunks.
Sec. 2. Establishing Connections.
Sec. 3. Changing Trunks and Ringing.
Sec. 4. Operation of Signals and Disconnecting.
Sec. 5. Equipment Trouble.
Sec. 6. Traffic Record (Peg Count).

Division VI—Ringdown Operators (and Supervisors)

Sec. 1. Answering Calls.
Sec. 2. Establishing Connections.
Sec. 3. Supervising on Signal and Disconnecting.
Sec. 4. Slow Answer Calls.
Sec. 5. Long Distance Calls.

Division VII—Multiple Marking Operators (and Supervisors).

Sec. 1. Handling Multiple Marking Calls at an "A" Switchboard Position.
Sec. 2. Handling Multiple Marking Calls at a Desk.

Division IX—Information Operators (and Supervisors).

Sec. 1. Handling Information Calls where Address Records are Provided.
Sec. 2. Handling Information Calls where Address Records are not Provided.

Division X—Rural Operators (and Supervisors).

Sec. 1. Rural Line Calls.

676 Standardization and Development of Toll Operating Practices.

This work is similar in scope to that in connection with local operating practices and bulletins have already been issued for the most important toll operating methods, namely:

Single ticket operating method.
Two-ticket operating method.
Call circuit operating method.
Recording method.
Two-number method.

Bulletins containing the detailed instructions governing the work of toll operators have been issued as follows:

Recording particular person toll calls.
Routing and directory work.
Holding the line of calling party.
Obtaining terminating toll center.
Passing call.
Handling Relayed Calls.
Handling through calls at intermediate offices.

A preliminary bulletin on the general question of improved toll line efficiency, outlining several methods for effecting important economies in the use of the toll plant.

Determination of the best operating methods for short haul toll calls handled by "A" operators, including so-called "tandem methods."

Fundamental Plan Work.

Determination of best methods for making local fundamental plans.

Determination of best methods for making toll fundamental plans.

Miscellaneous.

Study of general fire insurance plan for Associated Companies.
Study regarding disposition of material removed from plant.
Investigation of a very large number of patents and inventions.
Interference from high tension transmission lines having grounded neutrals.

Work has also been completed on about 800 other subjects.

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RHODES EXHIBIT 21.

Titles of Some of the Circular Letters and Specifications That Have Been Prepared for the Associated Companies.

Circular Letters.

Center Checking System.
Inspection of Protective Apparatus.
Location of Connector Block Used with Hollow Arm.
Private Branch Exchange No. 1.—Changes in Operator's Circuit.

Construction of Open Wire Lines at River Crossings.
Specifications for Iron and Steel Wire.
Alarm Fuses.
Changes in Desk Stand Binding Post Nuts.
Toll Line Construction—Placing Circuits to Admit of Phantoming.
Black Finished Desk Stands.
Small Tool Box.
Corner Bridle Ring.
Glass Insulators.
Central Office Equipment.
No. 25 Repeating Coil.
Wiring of Desk Stands.
Development Plans for Small Cities.
Transmitting "Notes on Exchange Construction."
High Potention Protectors.
Lead Sleeves.
Cable Plans for Small Cities.
No. 14 Cable Terminals.
Galvanized Steel Strand.
Specifications for Cresoted Wood Duct and Plank.
Private Branch Exchange No. 2.
678 Slotted Lamp Socket Mountings.
No. 10 Switchboard.
Galvanized Steel Strand.
Specifications for 12 or 20 Wire Line.
Preservative Treatment of Poles.
Conduit Plans.
Phantom Circuits.
Iron Wire.
Wiring of Telephone Switchboard Lighting Circuits.
Specifications for 40 to 80 Wire Pole Lines.
Insulation Joints in Lead Cable Sheaths.
No. 2 Toll Board.
Aerial Cable Hangers.
Cable Records.
Height of Wall Sets.
Preservative Treatment of Poles.
Slotted Lamp Socket Mountings.
Jack Markings.
Reversing Plugs.
Economies in Concrete Work.
Dry Batteries.
Cable Pulley.
Modifications in No. 17-A Test Set.
Central Office Records.
New Terminal Marking for Toroidal Repeating Coils.
Rural Line Subscribers' Set.
Phantoming Pole Pairs.
Arrangement of Keyboard Lamp Caps, Guards and Cords.
Rock Elm Pins.

Mercury Arc Rectifier.
No. 17 Cable Terminals.
No. 346 and No. 347 Tinsel Cords.
679 Color Scheme for Desk Stand Cords.
No. 71-A Heat Coils—Pull-out Type.
Joints in Iron Wire.
Test for Desk Stand Cord Connections.
Mine Telephones.
Comparative Economies in the Use of Gas and Electricity for Charging Batteries in Telephone Exchanges.
New Standard Trunk Section.
Central Office Building Plans.
New Retardation Coils for Composite and Duplex Sets.
Aerial Loading and Duplex Cable.
Method of Adding Plates to Storage Batteries.
Creosoted Rock Elm Pins.
High Resistance Transmitters on Local Battery Lines.
Transmitting Preliminary Draft of Specifications 3269 for the Construction of Twenty, Ten and Two Wire Pole Lines.
Abandonment of No. 14-A (10 pair) Cable Terminal.
Worn Plugs and Jacks.
Use of Lock Nuts in No. 14 Cable Terminals.
Chestnut Guy Stubs.
Telephone Central Office Power Machines and Accessories.
Switchboard Lighting.
Fahnestock Test Connector.
Measuring Instrument—Evershed Megger.
Improved Single Pulley Switchboard Cord Weight.
Modifications in Standard Magneto Subscribers' Sets.
680 No. 20 Instrument Wire.
Signal Plugs.
Transmission Efficiency of Copper-Steel Outside Distributing Wire.
Number Plate for Operators' Telephone Sets.
Tool for Cleaning Switchboard Jacks—No. 8 Switchboards.
Emergency Call Circuits and Emergency Local Ringdown Trunks.
New Toll Switchboard Cord Circuits.
No. 11 and No. 12 Protector Micas.
Cable Suspension Clamps.
Composite Set Rack.
No. 49 Type Alarm Fuses.
Vogel Ground Clamps.
New Types of Call Wire Trunk Circuits.
Improved Two-Conductor Switchboard Cord.
Specifications for Dead Oil of Coal Tar.
Galvanized Corner Bridle Rings.
Revised Specifications for Single and Double Armored Submarine Cable.
Revised Specifications No. 3235 for Exchange Aerial Construction.
Toll Switchboard Lighting.

Myers Break Finder.
Tool for Grooving Multiple Jacks.
Auxiliary Night Alarm Circuit for Small Offices.
Small Magneto Switchboards.
Standard Traffic Engineering Methods for Use in Connection with Building Plans.
Crosstalk Tests.
Information on Loading.
681 Revised Specifications No. 3292 for Transposing Single and Phantom Circuits and Dead Ending Wires at Test and Terminal Poles. Each Wire Attached to a Separate Insulator.
Change in Open Space Cut-out Equipment of No. 61 Type Protectors.
Specifications for Western White Cedar Poles.
Extra Glass Jars for Storage Battery Equipments.
Switchboard Platforms and Operators' Chairs.
Bridle Wire Electrose Insulators.
Portable Composite Sets.
Phantoming of Rural Subscribers' Lines.
No. 116 Cord Weights.
Color Scheme for Ringing Key Buttons and Plug Shells with Mechanically Locking Key Trunks.
Reversite Circuit Breakers for No. 1 Power Plants.
Methods of Splicing No. 10 B. & S. and No. 13 B. & S. Gauge Cable Conductors.
A: Most Economical Sizes of Cable to install Underground.
B: Provision of Stubs for Branch from Large Cables.
Redesign of No. 103 Plug.
Jack Spring Adjusting Tools.
Standard Length for No. 421 Switchboard Cord.
New Material Specifications.
Standard Lengths for Operators' Telephone Cords.
Specifications for Wood Preservatives.
Modified Nos. 35, 36, 37 and 51 Terminal Strips.
Color Cords and Shells for Test and Plugging Up Lines.
Specifications for Pothead Wire.
Proposed New Type of Prepayment Multi-Coin Box.
682 Blackburn Ground Clamp with Copper Shoe Attached to Band.
Automatic Switch for Electrolysis Drainage Wires.
Specifications for Solder.
Antimony Alloy Sheath for Underground Cables.
All Metal Flush Type Hotel Sets.
Strain Insulators.
Use of Repeating Coils in Toll Cord Circuits for Reducing Noise on Through Toll Connections.
Private Branch Exchange Switchboard No. 5.
Weatherproof Iron and Steel Wire.
Answering Jack Number Plates with Engraved Special Designations.
Porcelain Knobs.

Underground Conduit—Duct Requirements on Fundamental Plans.
Moistureproof Compound for Switchboard Wire.
Specifications for Fir Crossarms.
Metal Subscribers' Sets.
Gauge for Testing Individual Dry Cells in Talking and Ringing Batteries.
Transmission Equivalents.
No. 250 Transmitter with Steel Arm.
Standard Switchboard and Circuit Drawings.
Substation Switching Keys.
Loading of Telephone Circuits.
Pole Relays, Code No. 191-A.
Materials for Aerial Loading Coil Construction.
Subscribers' Station Installation—Line and Ground Wire Holes.
Maintenance of Transmitter Batteries at Isolated Telephone Stations.
Jack for Portable Telephones.
683 Number Plates for Stile Casings—Nos. 107-B and 23-C.
Rural Lines—Central Office Equipment and Method of Operating.
"A" and "B" Supervisors' Equipment.
Standardization of 2½ foot length for Receiver Cords Used with Desk Stands.
Specifications for Crossarm Braces.
Relay Switchboard No. 10—Provision of Extra Panel of Multiple at the End of the Board.
Method of Increasing "B" Operating Efficiency During Hours of Light Traffic.
Redesigned No. 7 Coin Collector.
Material Used in Exchange Aerial Construction.
Changes in Specifications for Pole Line Hardware.
Installation of Loading Coils T-300, T-680 and T-585 on Open Wire Lines.
Prevention of Electrolytic Corrosion in Prepayment No. 7 Coin Collector Coils.
Hub Guards.
Substation Switching Keys.
Testing Cabinet for Magneto and Small Common Battery Offices.
Specifications for Creosoted Yellow Pine Crossarms.
Rubber Faced Answering Jack Number Plates.
Wiring of Large Buildings for Telephone Service.
Improvement in No. 85 Substation Relay.
Circuit for Grouping "A" and "B" Positions.
Rules for Resuscitation from Electric Shock.
Standard Traffic Engineering Practices for Local and Toll Central Office Equipment.
No. 125 Receivers with and without Head Bands.
Standard Specifications for Repaired Material.
684 Method of Making Fundamental Plans.
Modified Nos. 38, 39 and 40 Terminal Strips.

Metal Battery Box for Subscribers' Stations.
Method of Wiring Condensers in Toll Cord Circuits.
New Type Transmitter Arms.
Improvement in Blue Bell Dry Battery.
Changes in No. 317 Type Subscribers' Sets.
No. 4 Private Branch Exchange.
Transmitters for Metal Subscribers' Sets.
Changes in No. 17 Cable Terminals.
Specifications for Cement and for the Inspection of Cement.
Improved Cord Hole Eyelet for Desk Stand Bases.
Circuit for Grouping "A" and Toll Switching Positions.
Improved Terminal Back for Desk Stands and Transmitter Arms.
Connecting Block with Soldering Lugs.
Changes in Equipment and Arrangement of No. 1 Trunk Switchboard Keyshelves.
Changes in Nos. 5 and 23 Induction Coils.
Revised Specifications for Composite Sets.
Improved Ringer for Common Battery Four-Party Selective Ringing Service.
Phantoming of Rural Subscribers' Lines—No. 1 Retardation Coil Box.
Antimony Alloy Sheath for Aerial Cables.
New Design of the No. 65 Terminal Strip for Horizontal Side of Main Distributing Frames.
Method of Handling Toll Calls from New Type Prepayment Multi-Coin Boxes.
Metal Block Protected Cable Terminal.
685 Standardization of Black Finish for Ringers Gongs and Clapper Guards.
Wiring of the Outgoing Trunk Multiple Directly to the Main Frame and Intermediate Type Terminal Strip for the Main Distributing Frame.
Specifications for Telephone Power Machines.
Tree Trimming and the Care of Trees.
Auxiliary Framing on Terminal Room Ceilings for the Support of Frames, Cable Racks, etc.
Ventilating System for Telephone Booths.
Connecting Blocks for Use at Substations.
Reporting Defective Material.
Method of Tying Receiver Cords.
Standard Main Distributing Frames.
Requirements for 25-Foot Class "C" Cedar Poles.
New Standard Central Office Message Register—Lock-up Type.
Tool for Removing Worn No. 49 Jack Sleeves.
Brush Treatment for Poles.
Direct Current Commutating Pole Motors for Charging Generators.
Insulation of Metal Subscribers' Equipment from Metal Walls.
New Phantom Circuit Repeating Coil.
Rubber Covered Plug Shelves.
Improved Worsted Receiver Cords.
Installation of Loading Coils No. 511 (T-680) and No. 512

(T-685) on Open Wire Lines. Spacing Coils and Grouping Coils on Poles at Loading Points.

New Unit Type Protector Mounting for Main Distributing Frames.

Revised Specifications for Underground Conduit Construction.

686 Battery Boxes for Dry Cells—Use of Dry Cells for Morse Local Battery and Transmitter Local Battery.

Rope Containing Metallic Strands.

Standard Intermediate Distributing Frames.

Supplying Ringing Current over Cable Pairs to Private Branch Exchanges.

One Point Transposition Brackets and Steel Pins for Transposition Brackets.

Standard Drop Light Handle and Guard for Use in Operating and Terminal Rooms.

Folding Door Booth.

No. 50 Type Prepayment Multi-Coin Collector.

Guy Anchors—Special Types.

Cable Terminal for Use in Buildings—Standardization of No. 22 Cable Terminal and Nos. 1, 2 and 3 Fanning Strips.

Transmission Data.

Underground Conduit Material Specifications.

Power Plant Wiring—Omission of Individual Cell Voltmeter Leads to Storage Batteries.

Pick-Up Alarm Circuit—Machine Ringing.

Improved Types "A" and "B" Composite Ringers.

Repair of Tinsel Switchboard Cords.

High Impedance Relay for Use in New Toll Cord Circuits.

Testing Circuit for Use in Connection with New Toll Cord Circuits.

All Metal Telephone Booths.

New Type Line and Cut-off Relay.

Separation of Aerial Cable Strand Ground and Protector Ground at Underground Cable Terminals.

Street Railway Telephone Set No. 278.

687 Omission of Subscribers' Multiple from "A" Switchboards.

Multiple Answering Jacks and Lamps.

Maximum Cable Lengths.

Concrete Steel Reinforcement for Poles.

Marking of Defective Pairs in Lead Covered Cable.

Alarm Signal for Main Discharge Fuse.

Automatic Keyshelf Brace.

Moistureproof Switchboard Cable.

Improved Two-Conductor Tinsel Switchboard Cord. Improved Test and Morse Board Cords and Service Observing Cords.

Specifications for Manila Rope.

Clearance of Telephone Wires, Cables and Guys at Highway Crossings.

(*a*) Joint Use of Poles. (*b*) High Tension Crossings.

Standard Relay Rack.

Standard Floor Plan Arrangements for Telephone Buildings in Single-Office Districts.

Enameled Distributing Frame Wire.
Copper Block Cutout for No. 8 Type Protector.
Handbook of Substation Practice.
Transmittal of "Examples Illustrating the Use of the Bulletin on Transmission Equivalents" and Printed Copy of Supplement No. 1 to Bulletin on Transmission Equivalents.
Railroad Private Branch Exchange Equipment.
Instructions Governing the Use of Dynamite.
Collection of Federal Tax on Telephone Messages.
Small Diameter Type of Cable—Specifications 3729.
New Type Supervisory Relay.
688 Oil Insulators and Pedestal Supports for Mounting Storage Batteries.
Cross-connecting Wire for Duplex Cable.
Dead Oil of Coal Tar for Bruch Treatments.
Starters for Alternating Current Motors.
No. 5-L Type Message Register.
Standard Armature Air Gaps for Substation Ringers.
Local and Toll Service Observing Equipments.
Standard Message Register Racks and Casings.
Splicing Cable—Use of Cotton Sleeve.
Cincinnati Clips.
Specifications for Lead Sleeving.
Abandonment of High Residence Heat Coils.
Standardization of Spring Terminals and No. 540 Cord for Connection of Blue Bell Dry Batteries.
Improved Loud Ringing Extension Bell Sets.
Receiver Cords—Covering for Tips.
No. 29-A Binding Post—Auxiliary Binding Post for Nos. 14 and 8 Cable Terminals.
Routine and Equipment for Handling Trouble Reports and Certain Associated Work.
Recovery of Substation Equipment.
Effect of Metal Prices on Cable Changes.
Waterproof Desk Stand Cords.
Primary Battery for Current Supply for Magneto Switchboards.
Nut Fit for Bolts Having a Short Length of Thread.
Specifications No. 3736—"Specifications for Locating Transpositions—Standard System."
Magneto Switchboards No. 105-A and No. 105-B.
Markings upon Bar and Cake Solder.
Handling Carbon Protector Blocks and Micas.
689 Telephone Connections for Trains at Stations.
Standard Lengths for Receiver and Desk Stand Cords.
Sleet Storm Data.
Master Specifications for Composite Cable (Non-Duplex).
Redesigned 3 by 7 Cordless Private Branch Exchange.
Improvements in Design of Cetral Office Heat Coil.
Maintenance of Main Frame Heat Coils and Protector Springs.
Specifications for Dead Oil of Coal Tar for Bruch Treatments.
etc.

Private Branch Exchange Switchboard No. 550-A.
Improved Calculagraph.
Sleeve Joints in Copper Line Wire.
Lubrication of No. 1-A Electric Clocks.
No. 1 Residence System.
Data for Determining the Proper Size of Central Office Storage Batteries.
New Types Metal Subscribers' Sets.
Mechanically and Electrically Operated Peg Count Apparatus, Guy Shield Plugs.
Duplex Cable.
Capacity of Paper Insulated Cable—Proposed Change in Method of Measuring.
Toll Test Board No. 4.
Switchboard Clocks for Use at "A" Positions.
Tinned Steel Sleeves.
Standardization of Outside Plant Practices—Placing Underground Cable and Splicing Lead Covered Paper Insulated Cables.
690 Changes in Manganese Used for Dry Cell Manufacture.
Cable Fault Locating Set—Exploring Coil Type.
Method of Placing Aerial Cable Rings.
Cable Paper.
Use of Superimposed Current for Operation of Selective Four-Party Bells.
Change in Distinguishing Colors on Individual Conductors of Switchboard Cords.
Change in Color Code for Distributing Frame Wire.
Specifications for Outside Distributing Wires.
Specifications for Break Irons and 5/8" Steel Insulator Pins.
Specifications for the Installation of New Type Break Irons and Old Type Break Irons Equipped with 5/8 inch Steel Pins.
Clamps for Small Cables and Ground Wires.
Specifications for Inside Wire.
Testing Circuit for Toll Line Busy Signals.
Operators' Chairs.
New Method of Connecting Four-party Selective Extension Bells.
Exposed Cables Entering Central Office and Subscribers' Buildings.
Transmission Measuring Set.
New Aerial Type 22 Gauge Cable.
Resurfacing and Re-engraving Call Circuit Key Buttons.
Designation Strips.
Large Gauge Cable.
Type "C" Porcelain Knob.
Switches for Duplex Sets.
Automatic Water-Fillers for Storage Batteries.
691 Tool for Operating "A" Type Cut-off Relays Previous to Cutover.
Aerial Cable Rings.
Requirements for 25-foot, Class "C" Cedar Poles.
Inductive Interference from Power Circuits.

No. 14 Type Cable Terminals Equipped with Special Wooden Face Panels.
Change in Condensers Used in Subscribers' Sets.
Composite Cable.
New Breast Plate for Operator's Transmitter No. 234.
Trouble Back Flash.
Standard Toll Rate Quoting System.
Local Peg Counts.
Toll Peg Counts.
Equating Traffic.
Traffic Summaries.
Local Service Observing.
Changes on Peg Count Summary and Statement of Traffic Costs.
Notes on Work Involved in Installation of Standard Toll Rate Quoting Systems.
Central Office Operating Routine Telegrams Telephoned.
Fire Drills for Operating Force.
Standard Local Operating Practice—Multiple Markings and Number Change Bulletins.
Standardization of Toll Tickets.
Standard Local Operating Methods—Disposition of Calls Resulting in Busy Reports.
Standard Toll Operating Methods: ST, TT and CC Methods.
Toll Line Efficiency.
692 Toll Service Observing.
Division of Toll Board Traffic.
Toll Recording Systems.
Improved Two-Number Toll Operating Method.
Standard Local Operating Methods—Handling Calls to Private Branch Exchanges When the Attendant is Not on Duty.
Two-Number Toll Service Observing.
Losses from Operating Force.
Standard Local Operating Practice.
Standard Toll Operating Practices.
Peg Count Accuracy.
Training of Toll Service Observers—Special Correspondence Course Plan.
Information Regarding the New Telephone Number or Location of Subscribers Who Move from One Exchange District to Another.

Specifications.

Steel Framework for Central Office Equipment.
Local Chief Operator's Desk No. 3.
Toll Chief Operator's Desk No. 2.
Woodwork and Leather for Central Office Equipment.
Slate Used in Central Office Equipment.
Gas Engine for use in Telephone Exchanges.
Eleven Pair Lead-Covered Submarine Emergency Cable.
Twelve Pair Emergency Line Cable.
Standard Reel Rack.
Seven Pair Emergency Line Cable.

Toll Test Board No. 2.
Toll Test Board No. 1.
693 Lead Covered Cable with Wool Insulation for Inside Construction.
Manager's Desk No. 7.
Information Desk No. 5.
Dead Man.
Nails (Galvanized and Tinned).
Special Rock Guy Bolt.
Fifteen Conductor Emergency Cable Reel.
Hard Drawn Copper Wire.
Portable Service Testing Set No. 1.
One Pair Emergency Cable Reel.
One Pair Emergency Cable.
Description of Central Office Equipment with Relay Switchboard No. 9.
Manhole Guard.
Cable Box Seat.
Installing a Gas Engine for Use in Telephone Exchanges.
Stringing Hard Drawn Copper Wire.
Central Office Equipment with Magneto Switchboard No. 105.
Wire Chief's Desk No. 7.
Red Cedar Poles.
Chief Operator's Desk No. 6.
A Method of "Cutting-Over" Telephone Cables with the Aid of a Tone Test.
Manager's Desk No. 8.
Chief Operator's Desk No. 7.
Chief Operator's Desk No. 8.
Light Galvanized Steel Seven Wire Strand (Mild Steel).
Wiring of a Central Office Equipment.
694 Central Office Equipment with Relay Switchboard No. 9 for Small Office with Single Position.
Chestnut Poles.
Fire and Sand Pails.
Ground Rod.
Hole Cleaner.
Installation of Office Terminals of Wool Insulated Cable.
Inspection of a Dirt Auger.
Inspection of a Joint Twister for Double Tube Sleeves.
Crossarm Cleats.
Asbestos Blanket with Containing Case.
Galvanized Steel Suspension Wire.
Wire Hanger for Long Spans.
Cleats and Binding Posts for Cable Boxes.
Instructions Covering the Use of Dynamite.
Inspection of No. 4 Protectors and Associated Apparatus.
Inspection of a Box for Holding Protector Parts and Tools in Cable Boxes.
Lead Covered Submarine Cable with No. 22 B. & S. Gauge Conductors.

Ten Pair Bridle Wire Cable.
Five Pair Bridle Wire Cable.
Wire Chief's Desk No. 8.
Description of the Method of Operation for Wire Chief's Desk No. 8.
Wire Chief's Desk No. 9.
Description of the Method of Operation for Wire Chief's Desk No. 9.
Substation Wiring.
Inspection of Chestnut Poles.
695 Hand Magazine for Dynamite.
Lockers.
Standard Combination Reel.
Dead Ending Bolt for Long Spans.
Instructions for Connecting Special Steel and Copper Wire at Long Spans.
Six Pair Bridle Wire Cable.
Chief Operator's Desk No. 9.
Ground Rod for Loading Coil Arresters.
Instructions for Placing Loading Coil Cases and Connecting Loading Coils to Underground Cable Conductors.
Tie Wires.
An Extension Fixture.
Structural Steel.
Balcony for Cable Poles for Use with Narrow Cable Boxes.
Lead Covered Paper Insulated Bridle Cable.
Balcony for Cable Poles.
Wall Tent Stoves.
(Provisional) Instructions for Placing Loading Coil Cases and Connecting Loading Coils to Aerial Cable Conductors.
Instructions for Splicing Lead Covered Paper Insulated Cables.
Creosoted Gum Plank.
Standard Green Pole Paint.
Joint Use of Poles by Telephone and Electric Light and Power Companies.
Description of a Central Office Equipment with Relay Switchboard No. 10.
Chief Operator's Desk No. 10.
Wire Chief's Desk No. 10.
696 Method of Operating Wire Chief's Desks No. 10 and 11.
Instructions for the Maintenance Inspection of Crossarms and Guying.
Instructions for Placing Aerial Cable Using Cable Suspension Pulleys.
Five (5) Wire Crossarm Cleat No. 2.
Single Outside Distributing Wire.
Construction of a Twelve or Twenty Wire Pole Line.
Construction of 40 to 80 Wire Pole Line.
6,000 Pound Strand.
10,000 Pound Strand.
16,000 Pound Strand.

Instructions for Making Insulation Joints in Lead-Covered Paper Insulated Cable.
Toll Supervisor's Set No. 4.
Toll Supervisor's Set No. 5.
Creosoted Blocks for Three Block Anchors.
Wire for Lightning Arresters T-533-B.
Wire Chief's Desk—Wall Type No. 11.
Inspection of a Cant Hook.
Instructions for Use of Creosoted Three Block Anchors.
Pike Poles.
Construction of a Six Wire 22 ft. Pole Line.
Method of the Analysis of Solder.
Aerial Cable Hangers.
Double Tube Copper Sleeves.
Dowel Pins.
(Provisional) Butt treatment of Poles with Dead Oil of Coal Tar.
697 Protection of Telephone Lines Crossing High Potential Lines Short Span Method of Protection.
Toll Ticket Filing Desk No. 1.
Substation Ground Wire.
Transposition Glass Insulators.
Distributing Frame Wire.
Inspection of a Long Handle Shovel.
Inspection of a Digging Spoon.
Line Fuse Wire.
Lead Sleeves.
7,000 Pound Two Wire Galvanized Steel Strand.
Treated and Untreated Square and Round Conduit Plugs.
(Provisional) Insulation of Iron Case Loading Coils on Open Wire Lines.
Inside Wire.
Steel Prod.
Inspection of Telegraph Resonator No. 38250.
Steel Transposition Pin for Phantom Transposition Bracket.
Malleable Castings.
Treated Wrought Pipe and Lap Welded Casings.
Guy Clamps.
Crossarm Bolts.
Staples.
Rock Guy Bolts.
Extension Fixture Braces.
Thimbles.
Washers.
Back Braces.
Carriage Bolts.
Guy Rods.
Drive Screws.
698 Weatherproof Copper Wire.
Creosoted Plank.
Strain Insulators.

Instructions for Making Phantom Circuit Transpositions.
Drop Bracket for Phantom Transpositions.
Galvanizing for Iron and Steel.
Guy Chain.
Creosoting Douglas Fir Duct and Small Douglas Fir Timber.
Wire Chief's Desk No. 2.
Method of Operation for Wire Chief's Desk No. 2.
Phantom Circuit Transpositions.
Guy Hook.
Tin Coating on Copper Wire.
Malleable Iron Clamp.
Cribbing Guards.
Creosoted Plank for Two Block Anchors.
Tamping Bar.
Digging Bar.
Paper Sleeves for Splicing Paper Insulated Cables.
Making Phantom Circuit Transposition with Pole Circuits on Adjacent Arms as Side Circuits.
Phantom Circuit Transpositions with Pole Circuits as Side Circuits.
Wooden Pole Steps.
Crossarm Paint.
Long Open Wire Spans at River Crossings.
Creosoting Timber.
Galvanized Best-Best Iron Wire.
Galvanized Steel Wire.
Installation and Operation of Pole Relays No. 191-A.
Galvanized Steel Wire for River Crossings.
699 Making Pot Heads.
Voltmeter No. 11075 Toll Test Board No. 4.
Polar Duplex Telegraph System.
Installation of Local Telegraph Sounders.
Instructions for Splicing Armored Lead Covered Submarine Cable.
Lightning Arrester T-533-B.
Steel Cable Crossarms Nos. 1, 2 and 3.
Installation of Bridle Wire Electrose Insulators.
Standard Black Pole Paint.
Standard White Pole Paint.
One Pair Insulated Lead Covered Cable.
Pole Line Brackets.
Wooden Tree Blocks.
Galvanized Bridle Rings.
Cable Rack.
Hooks for Cable Racks.
Galvanized Pole Brackets.
Crossover Clamps.
Steel Angle Support for Long Span Wire Hanger on Pole Fixture.
Bridle Cable Hanger.
Stub Reinforcement for Poles.
Single and Twisted Pair Braided Rubber Covered Wire for Morse Circuits.

Galvanized Strain Plates.
Transposition Bracket for Double Petticoated Porcelain Insulators.
Galvanized Sheet Iron Duct Shields.
Break Iron.
Steel Pin for Double Petticoated Porcelain Insulators on Transposition Brackets.
No. 22 Gauge Cable.
700 No. 19 Gauge Cable.
Creosoted Yellow Pine Crossarms.
Creosoting Yellow Pine Crossarms.
Creosoted Yellow Pine Stubs for Pole Butt Reinforcements.
Exchange Aerial Construction.
Tree Wire.
Creosoted Yellow Pine Poles.
(Provisional) Ringing Generator to be Used in Telephone Exchanges.
(Provisional) Ringing Dynamo-tor to be Used in Telephone Exchanges.
Special 400 Pair No. 22 Gauge Cable.
Installation and Operation of Composite Ringing Set for Telephone Lines.
Eastern White Cedar Poles.
Installation of Iron Case Loading Coils on Phantom Open Wire Lines for Phantom Circuits 1, 2, 3, 4—3, 4, 5, 6—5, 6, 7, 8 and 7, 8, 9, 10.
Twisted Pair Outside Distributing Wire.
Galvanized Reinforcing Strap for Messenger Bolts.
Installation of Iron Case Loading Coils T-685 on Open Wire Lines for Circuits 1, 2 and 3, 4 and Corresponding Circuits on Other Arms. Arranged so that Phantom Coils T-680 may be installed on These Circuits at Some Future Time.
Toll Line Glass Insulators.
(Preliminary) Installation of Phantom Loading Coils T-680 on Open Wire Lines for Phantom Circuits 5, 6, 7, 8 and Corresponding Circuits on Other Arms. Arranged so that Loading Coils T-685 may be installed on These Circuits at Some Future Time.
Concrete Steel Reinforcement for Poles.
701 Inspection of Worn No. 49 Jacks.
Inspection of Worn Plugs No. 109 and No. 110.
Installation of Phantom Loading Coils T-680 on Open Wire Lines for Phantom Circuits 1, 2, 3, 4; 3, 4, 5, 6 and 7, 8, 9, 10 and Corresponding Circuits on Other Arms. Arranged so that Loading Coils T-685 may be Installed at some Future Time.
Galvanized Pole Steps.
Galvanized Aerial Cable Rings.
Galvanized Pothead Support.
Cotton Sleeving.
Pole Tongs.
Galvanized House Bracket for Dead Ending Copper-Steel Drop Wires.
Cable Suspension Clamps.

Instructions for Placing Loading Coil Cases and Connecting Loading Coils to Underground Cable Conductors Used in Parallel.
Galvanized Corner Bridle Rings.
Exchange Line Glass Insulators.
Weatherproof Iron and Steel Wire.
Wooden Insulator Pins.
Creosoted Wood Conduit.
Vitrified Clay Conduit.
Double Armored Submarine Cables with No. 19 Gauge Conductors or larger.
Single Armored Submarine Cables with No. 19 Gauge Conductors or larger.
Installation of a No. 44-C Retardation Coil on Open Wire Circuits to Obtain a Rural Line Phantom.
Master Specifications for Composite Cable (non-duplex.)
Western White Cedar Poles and Guy Stubs.
702 Galvanized Bolts for Cable Suspension Clamps.
Galvanized Sheet Iron Cable Shields.
Sawed Redwood Poles.
Douglas Fir Crossarms.
Dipping Douglas Fir Crossarms in Hot Carbolineum.
Painting Crossarms.
Metal Sleeves for Soldered Joints in Cable Conductors.
Overhead Crossings of Electric Light and Power Lines.
Bridle Wire.
Porcelain Knobs.
Insulating Sealing Compound.
Dead Oil of Coal Tar for Brush and Open Tank Treatments.
Carbolineum and Similar Wood Preserving Oils.
Analysis of Carbolineum and Similar Wood Preserving Oils.
Toll Test Board No. 4. Description of Apparatus and Method of Testing.
40-60 Solder.
45-55 Solder.
50-50 Solder.
Rosin Flux Wire Solder.
Pothead Wire.
Installation and Maintenance of an Automatic Switch in Electrolysis Drainage Wires.
Toll Test Board No. 4.
Wheatstone Bridge No. 111077 Toll Test Board No. 4.
Cement.
Inspection of Cement.
Double Petticoated Glass Insulators
703 Rack for Composite Sets and Composite Ringer Sets.
Replacement and Reinforcement Inspection of Pole Lines
Installation of Loading Coils T-300, T-680 and T-685 on Open Wire Lines.
Double Petticoated Porcelain Insulators.
Crossarm Braces.
Hub Guards.

No. 17 Gauge Copper Steel Twisted Pair Outside Distributing Wire.
No. 17 Gauge Tinned Copper Steel Wire.
Composite Sets for Telephone Lines.
Artificial Cables for Use in Transmission Testing.
Installation and Operation of Simplex Sets.
Underground Conduit Construction.
Standard Main Distributing Frames.
The Brush Treatment of Poles.
Message Register Generators—General.
Standard Intermediate Distributing Frames.
Crossings of Wires of Cables of Telegraph, Telephone Signal and Other Circuits of Similar Character over Steam Railroad Rights of Way, Tracks, or lines of Wires of the Same Classes.
Standard Relay Racks.
Transposing Single and Phantom Circuits and Dead Ending Wires at Test and Terminal Poles, Each Wire Attached to a Separate Insulator.
Provisional Specs. for Gray Iron Castings.
Provisional Specs. for Manhole Frames and Covers.
Provisional Specs. for Conduit Castings.
Provisional Specs. for Reducing Couplings.
Provisional Specs. for Cast Iron Pipe Bend.
Provisional Specs. for Pulling-in Iron.
704 Transposing Phantom Circuits Made Up of Pole Circuits on Adjacent Arms, Terminating Wires at Test Poles and Terminal Poles, Each Wire Attached to a Separate Insulator.
No. 22 Gauge Lead Covered Silk and Cotton Insulated without Color Code.
No. 22 Gauge Lead Covered Silk and Cotton Insulated Cable with Color Code.
Filled No. 22 Gauge Lead Covered Silk and Cotton Insulated Cable with Color Code.
Master Specs. for Armored Submarine Duplex Cable.
Composite No. 19 and No. 22 B. & S. Gauge Duplex Cable.
Instructions for Installing Duplex Cable Using Capacity Unbalance Testing Sets.
Master Specs. for Duplex Cable.
Duplex No. 19 and No. 16 B. & S. Gauge Lead Covered Silk and Cotton Insulated Cable.
Specs. for Manila Rope.
Preliminary Specifications for No. 22 Gauge Cable. (Small Diameter Type).
Dead Oil of Coal Tar or Coal Tar Creosote.
Analysis of Dead Oil of Coal Tar or Coal Tar Creosote.
The Care and Operation of Storage Batteries.
Standard Message Register Racks and Casings.
Local Test Desk No. 12.
Local Test Desk No. 12—Description and Method of Operation.
Liquid Grade Dead Oil of Coal Tar.
Preliminary Spec. for Underground Cable Placing.

Specifications for Tinned Steel Sleeves.
Creosoted Rock Elm Insulator Pins.
No. 14 Ground Wire.

705 Q. What specific engineering work for the Southwestern Company has the General Engineering Staff done? You spoke of general work done, and of specific work. Mention some specific work that has been done for the Southwestern Company?

A. One of the important lines of work has had to do with this subject of fundamental plans, which I have already touched upon. In addition to that complete information in regard to the methods of making fundamental plans which has been sent to all the associated companies the General Staff has, at the request of the Southwestern Company, or its predecessor, made or actively assisted in the making of several fundamental plans for St. Louis. A fundamental plan was made in the year 1902-1903. On account of the rapid development of the business a revised plan was made in 1905 when there were about twenty-three thousand Bell stations in greater St. Louis. The indications of this latter plan were followed by the engineers for several years. In 1910 the engineers of the Missouri Company were confronted with the problem of relieving two of the St. Louis offices and two partial fundamental plans for the sections of the city involved were prepared and a complete fundamental plan was made in 1914, based on two hundred and eight thousand stations in greater St. Louis in 1930.

Q. That was an estimate of the number of stations that would be in greater St. Louis?

A. Yes, two hundred and eight thousand stations planned for 1930, including East St. Louis and the entire section east of the river tributary to St. Louis and the portion to the west outside the city limits, but still tributary to St. Louis as a commercial center.

706 Now these fundamental plans are based on what is termed the business forecast. They include an estimate of the population at the time, and in addition to that an estimate of the number and character of the telephone stations and their probable distribution. The character of the telephone stations has to be determined by classification into business, residence, party lines, direct line, extensions, private branch exchanges, etc. This gives a basis for estimating the amount, character, and destination of the traffic. The forecast of the future population of a city is a study in itself. Experts of the General Staff, who are dealing with this matter, keep informed continually with regard to all matters affecting the growth of all parts of the United States. They then, when a case of this kind comes up, take up the estimate with the local people, considering the tendencies affecting the whole great area which has relations with St. Louis, considering in detail the local conditions, plans and prospects of all sorts. The advantages of St. Louis as a center for manufacturing, jobbing, retail, professional and home life, etc., are thoroughly studied, and as a result an estimate is made of the probable future population. Then a further and more detailed estimate is

made of the future population in various parts of the city, changes arising from the development of land towards the outskirts, now vacant, and also changes of character within the regions already well settled being considered. A great many tendencies which we have observed in other cities are considered with reference to their application to St. Louis. Tendencies of former excellent residence quarters to change, for example, into boarding house districts under certain conditions, the increased tendency to live in apart-
707 ments, the effect of automobile and other rapid transit developments, the effect of factory developments, freight yards and their probable growth, are all considered as carefully as possible. Then a systematic investigation and study is undertaken, and by means of a detailed house to house study, which is called a house count. Carefully selected representatives make a survey of every residence, apartment house, factory and business building in the city, and the approximate rent paid for each. The character of the service which is likely to be taken is found to be rather closely related to the rent. Business places of all kinds are studied and their character noted, and the best estimate possible made, in conference with the officials of the Southwestern Company. Then, as a result of these conferences, and taking this house count and other evidence into consideration, the representatives of the two companies together decide on what is called a commercial appraisal for each homogeneous section of the city, that is, for each section that is small enough to be of the same general character throughout. The fundamental plans that have been made have been based on this kind of study, which is being made now for the revised fundamental plan. The plans of 1914 showed that in the future—that is, before the expiration of the 1930 period, that branch offices would be required at two wholly new locations; that four new buildings would be required to house the enlarged central offices now located in rented quarters; and that three new buildings would be required near existing but outgrown offices; and that enlargements and additions would be required for several other office buildings. That is the general
708 nature of the work that has been done with fundamental plans, specifically for St. Louis. In connection with that work a transmission study was made by the engineers of the General Staff who visited St. Louis and in co-operation with the local engineers made a thorough study to see how far our latest transmission improvements would allow the use of fine wire cables to be further extended, and the result reached showed that a very considerable economy could be effected by further extending the use of those cables. In buildings and central office equipment in the last few years the General Staff has advised on such building and general office work for St. Louis. I have here a list of fifteen or twenty central office projects upon which our engineers have advised, and studied for the engineers of the Southwestern Company. I can leave this as a record with the Commission if you wish to save time, and not read these specific items.

Mr. Frank: I think that is better.

The Witness: In connection with the insurance matters: Our insurance department in the year 1912 inspected fourteen buildings in St. Louis, and in 1916 made inspections of ten. In addition to this hundreds of engineering matters have been handled by the Staff from time to time at the request of the Southwestern Company. I have here a list of specific items. I will just read one or two of them, to indicate their character, upon which we have given specific advice in engineering matters relating to St. Louis. Under equipment, the size of storage batteries to be installed in connection with the Olive office to relieve the main battery of this load; advice in regard to the use of keyless trunks and the number of trunk circuits; with the necessary keyshelf and section drawing;
709 features of the wire chief's switchboard equipment for the Cabany office. These are rather technical, and I have a list of eleven of these. In substation equipment we have advised as to the proper adjustment of coin boxes to meet the various conditions of ground potential; and information regarding sound proof telephone booths; and methods for closing electric light circuits with folding door booths. In outside plant matters we made a cable study for St. Louis showing the most economical arrangement of the entire cable plant. We have given information as to special sizes of copper wire; and the most efficient methods of attaching and terminating twisted pair wires; information regarding the best type of cross connecting wire; information as to the supply of chestnut poles in certain districts; the proper field of usefulness for iron wire; discussion of matters concerning high tension crossings. I have a list of nineteen typical subjects of that kind. In protection and transmission matters: A tentative study of the application of loading to the St. Louis cables was made by the St. Louis engineers, checked up by our General Staff and modifications and improvements suggested. This study illustrates one of the important methods by which the General Staff renders assistance. In preparation for this study one of the St. Louis engineers spent a month in New York where he was instructed with respect to our loading data and its application to the complex plant in St. Louis. In 1912 the St. Louis engineer spent another month in New York acquainting himself with the numerous improvements in transmission matters which had been made since his earlier visit. As a result of all this work a very complete loaded cable system has been installed at St. Louis which has greatly
710 benefited the service given to subscribers and which has brought about these important results at a minimum cost. In 1913 several engineers of the General Staff spent several weeks in St. Louis, at the request of the Southwestern Company, making careful investigation of transmission conditions in certain specific cases where trouble had been experienced. Conditions were investigated in fourteen central offices and in the trunk plant connecting these offices. The causes of the transmission trouble were ascertained and recommendations made to enable the trouble to be overcome. I have here a list of a number of these typical cases. There are a number of others involving operating matters.

Mr. Rhodes prepared a statement concerning the services rendered

the Southwestern Telegraph & Telephone Company by the American Telephone & Telegraph Company, which was marked Rhodes Exhibit 22, and introduced in evidence, and is as follows:

Rhodes Exhibit No. 22.

Statement Concerning the Services Rendered the Southwestern Telegraph and Telephone Company (Missouri) by the American Telephone and Telegraph Company.

The Southwestern Telegraph and Telephone Company (Missouri) is one of a number of telephone companies in the United States each of which operates within a definite territory and co-operates with the others, so that, by means of all the companies together, and by the lines and system of the American Telephone and Telegraph Company, a comprehensive, standard, and uniform telephone
711 service is, as far as possible, rendered throughout the United States.

The American Telephone and Telegraph Company (hereinafter referred to as the American Company) renders to these companies, often called Associated Companies, certain services for which it receives in return 4½ per cent of certain revenues of these companies. These services rendered to the Southwestern Telegraph and Telephone Company (hereinafter referred to as the Southwestern Company) are:

First. Those services rendered directly by the large central administrative staff, sometimes called the "General Staff," maintained by the American Company for the benefit of the Associated Companies. This Staff consists of the general administrative officials of the American Company, including the president, the vice-president, and the board of directors; and the following departments of the American Company: The Legal and Patent Department; the Comptroller's or Accounting Department; the Treasurer's Department acting as a part of the Financial Department; the Engineering Department, and the Insurance Department.

In addition to these services rendered directly are those which the Southwestern Company receives as a consequence of the relationship which the American Company has established between all of the different departments of the General Staff, and the corresponding departments in all of the Associated Companies, and the Western Electric Company, which does the manufacturing.

Second. Services consisting of furnishing telephone instruments to the Associated Companies, including the Southwestern
712 Company and developing and making improvements with respect to those instruments and the transmission of speech thereby.

In order to show clearly and comprehensively at one view, the scope and extent of the more important services, I have pepared a chart which is shown as Appendix A.

Before describing the work done for the Southwestern Company by the Engineering Department of the American Company I will describe briefly the history, scope and functions of that department.

The Department has existed from the beginning of the telephone business. When it was formed the whole art of telephony was comprised in the crude and, from our present point of view, inefficient telephone of Professor Bell. Starting with the crude telephone of Bell, the American Company, through the various departments of the General Staff and the relations which it established between itself, the Western Electric Company, and the Associated Companies, has developed the art of telephony to the high state of efficiency that it has attained in America. With very few exceptions, all of the great number of improvements between the first speaking telephone ever made and the vast telephone system of today have been the result of this working arrangement established by the American Company.

The Engineering Department of the General Staff of the American Company has been a most important factor in all of these developments, including the transmitter, the metallic circuit, hard-drawn copper wire, the multiple switchboard, and transposed lines. In every branch of the now complex art of telephony, funda-
713 mental improvements in construction and service and large economies to the Associated Companies have directly resulted from this arrangement which was established by the American Company. From it have come most important inventions and improvements in switchboards, subscribers' sets, ringing devices, underground, aerial and submarine cables, underground and overhead construction methods; protection against dangerous currents, and improved operating methods. Valuable technical records pertaining to all branches of the art have been accumulated, and engineering data of every kind are on file and are constantly used in the work for the Associated Companies.

General engineering and scientific discoveries in this country and abroad are carefully studied by the General Engineering Staff, and, where containing possibilities of improvements in the telephone service or plant, the new ideas tested and the results made available to the Southwestern Company and the other Associated Companies.

The General Staff is in a peculiarly favorable position to obtain from abroad information of all kinds pertaining to the telephone art on account of the cordial relations which it maintains with the telephone and telegraph administrations of foreign governments, and also because of its relations with the Western Electric Company which has technical representatives in most of the principal cities of Europe as well as in Sydney, Johannesburg, Buenos Ayres, Shanghai and Tokio. Reports on matters which may be of interest to the Associated Companies are periodically received through the engineers at these places.

Representatives of the General Engineering Staff are sent
714 abroad from time to time to make special investigations and to attend congresses and meetings of foreign telephone officials. These are some of the means by which the General Staff is

enabled to keep in complete touch with all foreign developments that might be of interest or value to the Associated Companies.

The various services rendered by the General Engineering Staff to the Associated Companies may be classified as follows:

Class 1. Work upon problems for all of the Associated Companies in the benefits of which the Southwestern Company participates. This work is largely undertaken at the initiative of the General Engineering Staff and not upon specific request from the Associated Companies. In some cases the work is undertaken at the request of one of the Associated Companies, or as a result of difficulties experienced by one of them, but the problem is worked out for the conditions obtaining in each and all of the companies.

Class 2. Specific work done for the Southwestern Company. This work is usually undertaken at the request of the Engineer, or other officials, of the Southwestern Company, although, on account of its familiarity with the conditions existing in the territory of the Southwestern Company, from time to time the General Staff intiates specific problems and takes up with those officials matters concerning their company.

As a complete list of the problems which the General Engineering Staff has worked out under the two classifications given above, with only a brief description of each, would fill volumes, I will
715 only undertake to give, under each classification, a few examples illustrating the character of the services rendered and in some cases, where the nature of the work permits, definite figures indicating the value of such services to the Southwestern Company.

To appreciate the significance and proportion of the figures which I shall give showing certain savings which have been accomplished, they must be considered in relation to the construction, operating and maintenance expenses to which they pertain.

The savings, in the cases where it has been possible to evaluate them, have been determined as of the year 1913. The savings, which I have enumerated, have continued in the succeeding years in increasing amounts and will so continue in the future.

These data for the Southwestern Company are as follows:

Book value of plant as of Dec. 31, 1912	$11,726,000
New construction added in year 1913	1,237,000
Total expenses in 1913; of which operating and maintenance constitute the larger part	2,548,000

It will be seen that a substantial saving in any of the units which enter largely into these construction, operating and maintenance expenditures will amount to a large sum. Unless we have an appreciation of the total expenditures in these directions we are not in a position to judge of the reasonableness of the savings which have been accomplished in those departments of the business.

716 From their nature, many of the most valuable services rendered by the American Company to the Southwestern

Company are incapable of definite pecuniary valuation. For example, improved operating methods enabling the Southwestern Company to give a speedier and more accurate service than could previously be given to subscribers, cannot be definitely evaluated, although of the greatest importance.

Similarly, no one can definitely appraise the value of the development of metallic circuits, transposition systems and twisted pair construction without which the present extensive telephone development throughout Missouri and the rest of the United States could not have taken place. Even in those cases where I have made a definite pecuniary estimate there is room for the exercise of judgment. The work is of such a character that I believe two engineers, each competent and fair-minded, might perhaps arrive at different results. Definite figures are set down not as the sole or principal means of enabling the Commission to judge of the value of the services, but rather to furnish convenient illustrations of this value, and I am satisfied that they are trustworthy and as accurate as could be prepared, and that they are conservative. Even if radically reduced, they would still be much larger than the amount paid by the Southwestern Company for the services rendered.

Although the total savings from the work of the General Staff described and illustrated in this statement are real, and accrue from year to year, and are much larger than any figures which are set down in this statement, it is in most cases impossible to
717 trace them directly in the books of the Southwestern Company or any other telephone company for the reason that so often the result has appeared in the form of improved service without a corresponding increase in investment, expense, or telephone rates.

Even where the savings are direct and tangible, it is often impossible to find them in the books. This is well illustrated in the case of the very substantial and definite savings resulting from the improvement in cable sheaths. An examination of the books would show that in some cases cables actually cost more after this improvement than before. The explanation of this is found in the large increase in the cost of other raw materials entering into the construction of the cables. The effect of these savings in such cases as this is, therefore, to prevent the total costs from rising as high as they otherwise would.

The telephone industry also feels the high cost of living. On behalf of the Southwestern Company and other Associated Companies, the energies of the General Staff, not only the Engineering Department, but also the Administrative, Financial and other departments, have been directed to this problem. The result is, up to the present at least, that while the costs of labor, raw materials and commodities in general have been mounting higher and higher, telephone rates have not increased in proportion. This has been accomplished without restricting or impairing the service or cutting wages. On the contrary, these results have been attained at the same time
718 that we have provided in the face of increased wages and greater expenditures of all kinds a greatly enlarged and more efficient plant and a more extended, efficient and amplified service.

To illustrate the functions and scope of the General Engineering Staff a diagram showing its organization, marked "Appendix B," is attached hereto and made a part hereof. The engineers of the General Staff are not only highly experienced specialists in all branches of telephone work, but nearly every man is a graduate of one or more of the important American universities, colleges, or technical schools of recognized engineering and scientific standing. Numerous members of the General Engineering Staff also hold advanced degrees and some have studied at foreign universities. The Staff from time to time retains, in an advisory capacity, outside experts skilled in special materials, processes, or practices wherever their services will be of assistance in the work which is done for the Associated Companies. A diagram of the Western Electric Company Engineering Staff, which works in co-operation with the engineers of the General Staff, marked "Appendix C," is attached hereto and made a part hereof.

Having made this general explanation I will now describe more specifically a few items of work illustrating the nature of the services rendered by the General Engineering Staff.

Class 1.

Work upon problems for all of the Associated Companies in the Benefits of which the Southwestern Company participates.

719 Among some of the most important and far-reaching services rendered to the Associated Companies as a whole may be mentioned the invention and development of the improved transmitter, the improved receiver, the metallic circuit, the transposition system, the multiple switchboard, and paper insulated, lead covered cable. All of these constitute vital factors in the success of the telephone system of today, but as an adequate description covering our work in these respects would extend this statement unduly, I will pass to the following mention of a few items.

Hard Drawn Copper Wire.

The early telephone lines employed iron wire exclusively and it was found that, except for short distances, the transmission of voice currents over iron wire was unsatisfactory. If the telephone system was to meet the growing need of the public, something better than iron wire was required. The staff studied and tested wires of various metals and alloys and investigated the electrical laws governing the transmission of speech.

Copper, more nearly than any other commercially available metal, furnished the desired electrical properties, but copper wire, made in accordance with the art of manufacture then in vogue, lacked the necessary mechanical strength to be self supporting. Realizing the necessity for the use of copper wire, the engineers of the General Staff invaded the province of the wire manufacturer and

there pursued their investigations with such success that they
720 were able to produce what is now know as "hard drawn copper wire," which is so treated as to impart to the wire the necessary mechanical strength. To make use of this wire, new methods for handling and stringing it, for making joints, for attaching it to insulators and for repairing and maintaining it had to be devised.

All of these things were worked out with elaborate care by the General Engineering Staff. Expensive experimental lines were constructed between Boston and New York, and between New York and Philadelphia for the purpose of testing the mechanical and electrical qualities of the new product in actual service and to determine the relative efficiencies of different sizes and variations of wire for the purpose intended. All of this work having been completed by the Staff, the new product was placed at the disposal of the Associated Companies and has since become standard for telephone lines of any length in all parts of the world. The pecuniary saving to the Southwestern Company and the other Associated Companies growing out of this engineering work is almost incalculable, particularly because without the use of hard drawn copper wire the extension of the telephone system would be seriously retarded.

St. Louis has benefited and is benefiting today from the development of hard drawn copper wire, as in St. Louis there are over 3,000 miles of hard drawn copper wire employed in exchange service.

721 Improvements in Cables.

In the early years of the business no satisfactory method was known of placing wires in cables. It was seen that unless cables were developed the growth of the telephone system of the country would be stunted, the importance of the telephone service rendered to the public would be insignificant and the business of the Associated Companies would be but a small fraction of what it is today. The problem of cable development was undertaken by the General Engineering Staff and has been the subject of constant work and experimentation. First, the problem of placing wires in cables within cities was solved. Next, the difficulty of extending cables to suburban regions was overcome. Then cables suitable for interurban use were devised.

A type of cable for city use providing for 2,400 wires in a 3-inch duct, which formerly would only accommodate 200 wires or less, has been developed and made standard. This 2,400 wire cable represents the latest achievement in a continuous train of development which has progressed, step-by-step, only through continual, careful and exhaustive development work, investigation and invention, as well as study of manufacturing materials and processes accompanied by studies of transmission, economics and many other factors.

Further work is being carried on actively by the General Staff at the present time towards the development of aerial cables of smaller gauge wires than the present standard. Also other de-

velopment work being done on this subject promises econo-
722 mies from improvements in the insulation of the wires and in the sheath of cables.

One of the important improvements in city cables resulted from a study which disclosed the laws of the electrical transmission of speech whereby we were enabled to reduce largely the amount of copper in certain lines, although increasing it somewhat in others, the net result being that, in the case of about 70 per cent of the cables employed in subscribers' lines of the Associated Companies and for certain short trunk lines between central offices, the first costs were reduced about half.

The Southwestern Company has already saved (1913) as a result of this work over $1,000,000, in the first cost of its local cable plant in the City of St. Louis. The annual savings in charges against operating income for 1913 alone amounted to over $140,000 on account of this new type of cable. Inasmuch as the Southwestern Company must continue to grow for a great many years to come, and inasmuch as the plans of the Company already made contemplate a very large addition of stations during the coming years, it is certain that the savings from this cable improvement will increase each year.

The above figures take into account only the savings in the cables themselves. Inasmuch as this cable improvement resulted in increasing the number of conductors which could be enclosed in one cable, it therefore reduced the number of underground ducts required. These savings in ducts in the City of St. Louis have already amounted to over $190,000, in first cost for the Southwestern Company and the annual savings in charges against operat-
723 ing income for 1913 alone, amounted to not less than $20,000. Adding this saving of $20,000, on ducts for the year 1913 to the $140,000, saving on cables for the same year, we have a total saving for that year of $160,000 in the City of St. Louis for the Southwestern Company.

New Alloy for Cable Sheaths.

The metallic sheath for cables formerly consisted of an alloy of lead and tin, lead alone not having the proper mechanical and chemical qualities. On account of the high cost of tin, the General Engineering Staff made studies and experiments and many trials extending over a period of four or five years, and covering a wide range of alloys differing from each other not only with respect to the metals employed, but also the proportions of each. This work resulted in a cheaper and equally efficient cable sheath by means of which the first cost of cables for the Associated Companies, taking the output as it runs from year to year, has been reduced by from 4 to 8 per cent. For the Southwestern Company the saving in first cost to the end of 1913 amounts to over $8,000. The annual savings in charges against operating income for 1913 alone amounted to over $1,100. This improvement was only introduced in the year 1912. This saving has increased up to the present time and will increase rapidly in succeeding years.

Phantom Circuits.

For many years the General Staff has done work upon the development of phantom circuits whereby, from two actual or
724 physical circuits, a third or phantom circuit may be obtained. An extraordinary degree of precision in the design and construction of apparatus for this purpose is needed and special precautions in the arrangement of the circuits and in their construction is necessary. Designs of apparatus, specifications, and rules for line construction were prepared by the Staff, and a large number of these circuits established by the Associated Companies. While particularly applicable to toll line and trunk line construction, these circuits have been so arranged as to apply to certain classes of rural subscribers' lines. The savings to the Southwestern Company from the use of phantom circuits have amounted to over $165,000 in the first cost of plant. The savings in annual charges for this reduced investment *is* not less than $25,000 for the year 1913.

Duplex Cables.

Inasmuch as phantomed open wire lines, when they reach the outskirts of large cities, have to be carried in cables, it became necessary for the General Staff to develop a phantom or duplex cable suitable for this work. Here again peculiar and very serious difficulties were encountered and the work covered a period of years. The Southwestern Company has already installed some of this duplex cable with advantages, both in economy of first cost of construction and in enabling phantom open wire lines to be extended on the phantom principle into large cities where open wire construction could not be used.

725 Application of Loading to Open Wires and Cables.

While the savings in open wire lines and cables mentioned above have been due directly to improvements in the lines and cables themselves, other improvements have been due directly or indirectly to the application of loading (Pupin invention). The factors involved in this new art of "loading," pertain to some of the most advanced and difficult branches of higher mathematics, physics, and electrical science, and can be dealt with only by scientists and engineers of the highest and most advanced type.

While the fundamental principles of the invention were described and covered in the patents of Prof. Pupin which were acquired by the American Company, there remained an immense amount of work to be done to reduce to practice the numerous difficult physical and mathematical conceptions of the loading principle, and to do this so as to attain the improvements in service and the economies aimed at, and also to bring the methods of installation and maintenance within the capabilities of the regular construction and maintenance forces of the Associated Companies. This has been the work of years of a large group of distinguished scientific men

connected with the General Staff, and while extraordinary benefits have already been derived by the Associated Companies from this work, much more is being done.

The loading principle is applicable both to cables and to open wire construction on poles. Its application was first worked out for ordinary overhead wires and for ordinary underground cables,
726 and the results were placed at the disposal of the Associated Companies. The Southwestern Company has greatly and directly benefited from this development in the City of St. Louis. Loading has been applied extensively to the inter-office trunk cables and has resulted in a saving in first cost of plant (1913) of at least $200,000. The saving in annual charges against operating income for this reduced investment is not less than $26,000.

For some time after the loading of ordinary open wire and cable circuits was developed and made available for the use of the Associated Companies, there was no way known of applying loading successfully to phantom circuits and duplex cables. The Associated Companies were therefore confronted with the situation that the use of phantom circuits excluded on such wires the use of loading, or, if they desired to take advantage of loading, they would be excluded from the advantages of using phantom circuits. The General Staff devoted themselves diligently to this problem and they have developed, and placed at the disposal of the Associated Companies, methods by which it is possible not only to load the physical circuits, but also to load the phantom circuit.

Through the application of loading to the long lines extending between its territory and those of the other Associated Companies, and through its application to lines and cables of other Associated Companies with which they connect, it has greatly extended the distances to which subscribers of the Southwestern Company can obtain telephone service, and has very much improved the
727 service to places situated at more moderate distances where, prior to the development of loading, conversation was possible but not as satisfactory as at the present time.

Other Means of Improving Speech Transmission.

In addition to this development of the art of loading, the General Staff for many years has conducted exhaustive studies to extend still further the range through which it is possible to transmit speech with the end in view that subscribers in such a city as St. Louis would be enabled to talk satisfactorily with subscribers in any other city or town in the United States, however distant it might be. As a result of this work of the General Staff it is now possible to talk with ease from St. Louis to the other principal cities in the Union.

It is not only in improving transmission to points outside of its territory that these achievements of the General Staff are of benefit to the Southwestern Company, but they are of such a nature that they will have important applications within the trunk line plant of the Southwestern Company itself, greatly improving transmission not only from points on their lines to points outside of their territory, but also between points within their own territory.

One installation of the amplifying devices by which these results are attained has already been made in the territory of the Southwestern Company, resulting in notable improvements in transmission.

By means of this installation, at a cost of only a few thousand dollars, results have been accomplished which would otherwise have required the expenditure by the Southwestern Company of
728 many thousands of dollars. Even with these very large expenditures, it is doubtful if the results which have been accomplished could have been obtained equally well. Another installation, now planned for, will increase further the benefits to the service of the Southwestern Company and the subscribers connected thereto.

Inasmuch as these improvements are the subject of patent matters now pending, it is not practicable nor is it necessary to enter into a technical description of them. It is, however, proper and very interesting to point out in general terms how the solution attained by the General Staff differs from that proposed by a number of European scientists, as well as by a number of American inventors.

The method of attack adopted by these other scientists and inventors was to employ special and most ingenious and complicated apparatus, batteries, switches and transmitters at the subscribers' stations. From a prolonged study of the problem, the General Staff concluded that the solution was not to be found in this manner, but rather was it to be found in improving the methods of line construction and equipment and by the developing and introducing of intermediate apparatus into the trunk lines.

This method of attacking the problem, adopted by the General Staff, has met with complete success, so that subscribers in St. Louis can talk over distances vastly greater than ever before possible and before long, will be able to talk everywhere throughout the United States. This they can do without any expense to the Southwestern Company for new construction and without changing even
729 a wire or any piece of apparatus of any kind pertaining to subscribers' stations, subscribers' lines, or local switchboards.

To be able to extend so greatly the effective talking range of every telephone in the territory of the Southwestern Company without the expenditure of even one dollar for construction or reconstruction in subscribers' plant, or line or cable or switchboard is an achievement of the greatest importance and value to the Southwestern Company and every telephone user in the State.

The value of this achievement is emphasized still further when it is understood that, by means of the solution proposed by the European scientists, even if it were found to be practical in a laboratory way, it would be necessary to reconstruct each subscriber's telephone station, as well as the central office and other switchboards and much of the line plant in order to extend the range of transmission. Even then, with the enormous expense of reconstruction which would be entailed, the results would be more expensive to the public and vastly inferior to those now obtainable by telephone users in St. Louis and elsewhere throughout the State of Missouri.

Wireless Telephony.

In working out the wire problems just referred to the Engineers of the General Staff recognized that they had developed certain scientific facts, methods and devices which might, by further work, successfully solve the problem of wireless telephony. Work was, therefore, directed to this problem with results where were conclusively demonstrated when, during 1915, speech was successfully transmitted through space across the continent of North America from Washington, D. C., to San Francisco, and also from Washington to Hawaii, as well as across the Atlantic Ocean to Paris. These results achieved by the General Engineering Staff were so remarkable that they have attracted the attention of scientists, engineers, and laymen all over the world.

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The problem of connecting wires and wireless system has been solved by the General Engineering Staff so that persons speaking at the end of a wire into a standard Bell telephone have talked over the wire, hundreds and over a thousand miles long, and at the other end of the wire connected with a wireless station equipped with our wireless system and thus extended the connection by means of the wireless system across the ocean or to a moving ship at sea. This has been accomplished by apparatus developed, designed, manufactured, installed, and operated by the General Staff and the engineers of the Western Electric Company.

The Engineers of the General Staff have studied with much care the possibilities and limitations of wireless telephony and its place in a comprehensive telephone system. It may be confidently stated that wireless telephony will supplement but not displace the wire system. It will serve to connect the wire system with ships at sea, steamers navigating rivers like the Mississippi, Missouri and Ohio, across large bodies of water and with other places where conditions make it impracticable to extend wires or where such extension would be extraordinarily difficult and costly. Peculiarities of wireless telephony, inherent in it, seem to limit its commercial application to such conditions.

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Systems of Farmers' and Rural Lines.

The farmer's rural line depends for its success upon the ability to operate a large number of stations on a single circuit, known as a "party" line. In the early days of the business all attempts to give satisfactory service of this kind failed, it being found that the presence of two or three stations on a line seriously impaired transmission, and that, with as many as five or six, successful transmission of speech was out of the question.

After a great deal of experiment and research extending over many years, a very simple method was devised whereby, without in any way interfering with the transmission of speech or causing disturbance upon the line, as many as a dozen or twenty, or even more stations could be attached to one circuit.

This development of the telephone into the homes of the farme and small storekeepers and others of a like character in rural d tricts constituted one of the most gratifying developments of t telephone art. Not only has it greatly simplified many proble for the telephone companies, and extended their business, but it h been set down by competent authorities on political economy a social subjects as a factor which by destroying the isolation of t farmer has produced a wonderful improvement in his econom and social life by placing him in constant touch with the mark and sources of supply and with the weather bureau and providi for his family a ready means of communication available n
732 only for social purposes, but also at all times a ready mea for summoning help in the event of danger or sickness.

Party Lines in Cities.

The same principles which have permitted rural line service to b given have been applied to the subscribers' station apparatus in ci exchanges, enabling those having but little use for the telephone t obtain service on a basis which would be otherwise impracticabl In this way, the service, by reaching out so as to include the sma users, has been rendered more valuable to the larger users, wh of course, require direct lines.

Such services as these which were rendered by the General Sta in connection with the development of rural and city party lin apparatus are obviously of very great value to the Southwestern Com pany but it is easy to see how difficult it would be to place a pecuni ary value upon them.

Fundamental Plans and Development Studies.

To convey a proper understanding of the broad and underlyin scope of fundamental plans it is necessary to describe their characte The telephone systems of the Associated Companies are constantl growing not only in the number of stations but also in the amoun of business handled and this growth must necessarily continue i the future.

The Company undertaking to supply a city with telephone ser ice cannot select only those customers in the downtown district which it would be most convenient to serve and neglect th
733 others. It must be prepared, within reasonable limits, t supply service to the outlying residence districts also. Fo this purpose telephone buildings must be erected, switchboards in stalled in them, and underground conduits and overhead lines buil connecting the central offices and extending from them to the sub scribers' stations.

In providing this plant economic questions constantly arise as t where the various parts shall be located and how large they shall b and what provision shall be made for future growth. It is th province of the study the results of which appear in the fundamental plan to answer these questions along broad lines.

As an illustration of one feature of fundamental plan work, it is obvious that the number of ducts which should be installed in advance of the immediate needs is a very important engineering and economic problem. If but one duct is put down now and another one is needed the following year manifestly a waste of money will be incurred due to removing the pavements and making a new excavation the following year and restoring the pavements again. To provide for the future, therefore, by digging up the street each time a new duct is needed would cause a great waste of money.

On the other hand, to take an extreme case, if a sufficient number of ducts were put down to provide for the needs of one hundred years, even assuming that one could forecast accurately for such a long period, another waste of money would take place, for the interest and other annual charges upon this advance construction for so many years would more than offset the saving which would be made by avoiding the repeated excavations. As a result of a great deal of work which the General Engineering Staff has done on this
734 subject, it has been found that in the cities of the United States, as a general thing and under average conditions, the most economical period for which to provide ducts in advance is from seventeen to twenty years.

A similar state of affairs exists with respect to buildings. It is impossible to buy land in small parcels year by year and add portions of the building exactly corresponding with the growth of the system. This is also true of the switchboards going into the building. The ultimate capacity of the switchboard, as well as of the building, must be determined at the beginning, although not necessarily fully equipped at that time.

Unless all of the factors pertaining to growth which I have mentioned, and many others, are carefully studied and analyzed, no one could tell what size of building or switchboard should be planned for, nor could it be known how many buildings or switchboards would be required, nor where they should be located, nor how many ducts should be put down in each underground conduit run. These factors have to do with the most expensive portions of the plant of the telephone company. This constitutes in the minds of those who have studied this problem a serious business hazard that cannot be avoided by the telephone company, which must take the risks involved.

Recognizing the far-reaching importance of these considerations, the General Staff made this the subject of prolonged investigation and years of study the result of which was to devise methods of making fundamental plans which minimize as far as possible the losses growing out of these conditions which are inherent in the telephone business.

735 The General Staff, owing to its nation-wide experience in these matters has experts who have specially studied the growth of all parts of the United States and who have given continuous attention to this matter of development. These experts are placed at the disposal of the officials of the Associated Companies and, utilizing all the information obtained from the administrative

and commercial officials of the Associated Companies, who are thoroughly familiar with the local conditions and tendencies, the most trustworthy forecast that is possible is made of the number and location of subscribers and the probable character of the business for a long period ahead.

By the careful attention which is given to this important matter, the sources of error are reduced as much as possible. They cannot be and are not eliminated. Accordingly, therefore, the fundamental plans based upon these forecasts must be revised every few years so as to be adapted to changing conditions.

The fundamental plans effect great savings by avoiding errors of inconsistency which would otherwise be present if no fundamental plan existed as a guide. Having a fundamental plan to start with, it can be modified every few years to meet the exigencies of the situation with very much greater economies than would be the case if no fundamental plan were available. The value of the construction to be based upon the fundamental plans which have been made for the Associated Companies as a whole would reach an enormous figure. Some idea of its magnitude may be gathered from the fact that based upon the fundamental plans of St. Louis alone, construction has already been or will be carried out in the near future to the amount of over $11,000,000. It would be difficult to
736 over-estimate the importance of the service rendered by the General Staff in this matter of fundamental plans and development studies, and although no method exists for exactly evaluating its worth, this service to the Southwestern Company must be set down as having a very great value.

Development and Standardization of Apparatus.

It is desirable to employ apparatus of a uniform type or standard in all places where the conditions permit. The great importance, from the standpoint of economy and efficiency of service, of this matter of standardization in a vast telephone system such as that of the United States, requires, on account of its magnitude, much consideration in order to be appreciated.

Unless there existed a general staff for the establishment of standards, there would be a multiplicity of types of nearly every one of the thousands of pieces of apparatus composing the telephone system of the country, and this would result in an impairment of service and lack of economy and efficiency in many ways, only a few of which will be mentioned here.

In the first place, intercommunication between divergent types of apparatus would render the engineering and operating problems vastly more complicated than where standardized types are used, and in the second place, the costs of apparatus would be substantially increased because of the increased cost of developing and manufacturing and carrying in stock ten or a dozen, or even more, different types of apparatus where one would answer. If this development work were not done for all of the Associated Companies together, each
737 of them would be required to have a separate development staff, thus greatly multiplying the total engineering expense

of the companies as a whole, a well as increasing the price which they would have to pay the manufacturer. There is no doubt that by this standardizing, the Associated Companies including the Southwestern Company, are getting their apparatus at a smaller figure than they would if there were, for each of the hundreds of different kinds of apparatus, ten or more standards instead of one as is now generally the case with the apparatus that they use.

There is, going into their various plants in an average year, the following amounts of apparatus and material to which the benefits of standardization apply:

Central office and substation equipment, about	$18,000,000
Lead covered cable	9,000,000
Other material	19,000,000
Total	$46,000,000

By some who are competent to judge in such matters it has been said that a saving of 5 per cent in the price which the Associated Companies pay for such apparatus is fairly chargeable to standardization; but even assuming a figure of only 2 per cent, there is an annual saving to the Associated Companies, including the Southwestern Company, of about $900,000. Whatever the true saving may be, I think I have said enough to show that this matter of standardizing is of very great importance to the Associated Companies.

I will explain somewhat further how this matter of standardizing is brought about. The General Engineering Staff is located
738 at New York but is in close and constant touch with all of the Associated Companies by direct studies, sometimes of long duration, conducted by General Staff engineers in co-operation with the local officials in the territory of the Associated Companies, and by visits of the officials of the Associated Companies to New York, and by constant correspondence, reports, statistics, specifications, bulletins, etc.

By these methods the General Staff is at all times in close touch and full sympathy with the exact conditions and difficulties arising in each locality. A new difficulty arising in an Associated Company, which demands the adoption of a new standard, is studied in the first instance with the utmost care so as to get exactly the local point of view, and to take full advantage of the ideas and suggestions of those who first encountered the difficulty.

The matter is then studied in the light of the information gathered from the other Associated Companies, and from the valuable records and experience of the General Staff, and from any and every other source, whether in this country or abroad, which might be helpful. The aim is to determine, first, what are the real needs of the situation. This having been arrived at, the engineers of the General Staff, expert in the particular line in question, are set to work to develop the best apparatus or method to meet the new situation. If the case happens to be one requiring the development of ap-

paratus, the requirements of the case are laid before the Engineering Department of the Western Electric Company, with instruc-
739 tions to proceed with such development. A statement of the results which must be accomplished by the apparatus is given and certain cost limitations are fixed. These engineers are not restricted as to method, but are held closely to results, and the General Staff engineers see to it at all times that, in connection with the development of any apparatus, full and complete consideration is given to all questions concerning operation, maintenance, and the economics of the problem.

At all times, therefore, the development of apparatus is under the control of General Staff engineers thoroughly familiar with and having due regard for the service requirements. During the course of their work on the development of this apparatus, Western Electric engineers are in constant touch with the engineers of the General Staff, and when a successful apparatus is devised, it meets the approval of the General Staff, the Associated Companies being consulted at every point where necessary.

If the price is satisfactory, the apparatus is finally made standard and recommended to the Associated Companies. Wherever practical trials are necessary these are made once and for all under the direction of the General Staff, and do not have to be duplicated by the Associated Companies, thus in another way making important savings for them and practically eliminating wholesale experimentation upon the public.

This matter of standardization illustrates very well the nature of the relations between the Engineering Staff of the Western Electric Company, the Engineering Staffs of the Associated Companies, and the General Staff which has general supervision over the technical methods of all.

740 The officials of two of the European administrations, in assigning a reason for the backwardness of the telephone in Europe as compared with America, have gone so far as to say that they ascribe the superior development of the telephone in America to this close working arrangement with the Western Electric Company. An officer of one of the most prominent electrical manufacturing corporations in Europe made a similar statement in accounting for the superiority of the Western Electric Company as a telephone manufacturer.

While I think these foreign officials, in forming this judgment, have overlooked other factors which have been at work, my own knowledge of the telephone operating and manufacturing business in America and in Europe convinces me that this intimate, efficient and harmonious working arrangement between the various sections of the General Staff, the Western Electric Company, and the Associated Companies has been one of the important factors in placing America at the head of all countries in the matter of telephone service.

It is not only the equipment, personnel and achievements of the different departments of the General Staff, but it is also the favorable nature of this relationship, broadly considered, which must also be

taken into account in judging of the value of the services rendered to the Southwestern Company and in estimating the capabilities of the institution which renders those services. Without these relationships these services could not be rendered.

741 Development and Standardization of Switchboards.

All that has been said above with respect to the development and standardization of apparatus applies to switchboards, including not only the large central office equipments where the subscribers' lines are interconnected, but also the smaller and very numerous switchboards located at subscribers' stations, particularly in business offices, factories and hotels, and known as private branch exchanges.

From the first telephone switchboard installed by the Bell Telephone Company at Boston, with its equipment for 7 stations, to the magnificent switchboard of today, providing in some cases for as many as 20,000 stations and forming part of a switchboard network giving intercommunication to millions of telephone users, the General Staff has been the controlling factor in this remarkable development. Always keeping abreast of the requirements and usually being in advance, they have supplied the needs of each period of telephone growth and the most successful results in switchboard design achieved anywhere have been due to them.

Although it is unnecessary to describe in detail the great importance of the work of the General Staff in the development of the various switchboard systems which have been produced to meet the demands of the service, it will be necessary to describe at least one development as illustrating the character of the whole.

At one time, even in the largest cities, the telephone subscriber was required, in order to signal the central office, to turn a crank connected to an electrical generator which operated both a bell at this station and an enunciator before the operator in the central
742 office. When he had finished his conversation he was expected to turn the crank again, or "ring off," as it was called, thus notifying the central office operator to disconnect. Subscribers frequently forgot to "ring off" and the operator consequently was slow to disconnect, because in order to find out whether the subscriber had finished talking it was necessary for the operator to "listen in" upon the line and ask "waiting?" or "are you through?"

With this system of switchboards there were several cells of electrical battery at each subscriber's telephone. This made it necessary for the Associated Companies to employ a large staff of men constantly visiting the subscribers' stations to renew and repair these batteries.

After a great deal of inventing, experimenting and developing a switchboard system was devised, known as the "common battery" system, which today, all things considered, represents the highest development of the switchboard *art* for offices of sufficient size. It did away with all of the batteries at the subscribers' stations and substituted therefor one large storage battery at the central office common to all of the subscribers' lines.

In addition to this it greatly improved the service at the large central offices by enabling the operators to tell at a glance, from the appearance of two small electric lamps, when the subscribers had finished talking, and then to disconnect them without listening upon the line or disturbing the subscribers in any way. More than this, in large centers, the greatly improved signalling methods and many other advantages which were introduced into this new switchboard vastly simplified the work of the central office operators,
743 improved the service, and removed most troublesome annoyances from the public.

The development of the common battery switchboard, briefly referred to above, did not end the switchboard development work done by the General Staff. Other work of the highest importance pertaining to switchboards and switchboard apparatus has been done and is being done at the present time. The nature and value of such work to the Associated Companies may be inferred from the following brief statement in reference to a few such developments.

The line and cut-off relays associated with each subscriber's line terminating on a common battery switchboard form a very important part of such switchboards. Development work by the General Staff has resulted in making available, for the Associated Companies, line and cut off relays of such design and construction that they are not only cheaper in first cost, but superior from a maintenance standpoint to the relays formerly available.

The Associated Companies are now getting these new relays and by their use it is estimated that the first cost of the switchboards purchased by the Associated Companies in a year is reduced by more than $150,000. This figure takes no account of the improved service and maintenance economies which will result from the use of such relays.

This item of work well illustrates one phase of the activities of the General Staff on behalf *fo* the Associated Companies. Every piece of apparatus developed is most carefully studied and scrutinized and tested by the engineers of the General Staff in order
744 to make sure that the very best results from a service and maintenance standpoint are attained.

In connection with incoming trunk circuits, which form an essential part of the switchboard equipment of multi-office telephone systems, important improvements have been made. Special incoming trunks have been perfected which, where conditions are suitable for their use, make important operating economies as well as improving the telephone service. For situations where such trunks cannot be employed, other trunks operating on the so-called "mechanically locking key" principle have been developed and perfected so that substantially the advantages of keyless trunks are obtained.

To illustrate the savings that result from various improvements in switchboards I will mention the work done on switchboard cords. Two large moves have been made in this matter, since the development of the improved types of switchboard referred to earlier, which have resulted in cords that reduce maintenance and improve the service. In the item of maintenance alone, this development of

cords by the General Staff is now saving the Southwestern Company $29,000 each year in the City of St. Louis.

Development and Standardization of Telephone Building Arrangements.

Telephone central office buildings must be designed and erected with due regard to accommodating the telephone switchboard and its associated apparatus, and the operating and maintenance forces required in connection therewith.

745 Many considerations must be taken into account in the design of such a building, not only with reference to the initial use to be made of it, but also to the fact that it must be capable of economical and satisfactory extension, as the business grows, to provide for the additional equipment and forces that must be installed in it.

Much work has been done and the results placed in the hands of the Associated Companies, and much more work on this matter is still being done so that the Associated Companies are kept fully informed of the latest and best known practices. With this information before them the Associated Companies are enabled to incorporate their local requirements into the general plans, thereby providing in each case the best and most economical building.

Development and Standardization of Outside Plant.

The General Staff maintains a corps of experts giving constant attention to the standardization of the outside plant and the materials used in its construction. This work is peculiarly important on account of the enormous amount of money invested in the outside plant and the very large additions made to it each year by the Associated Companies to meet the increasing demands for telephone service.

If each Associated Company built pole lines, for example, without regard to established standards which had been carefully developed as a result of exhaustive engineering studies, a wide diversity of practice would result in the design, dimensions, strength and durability of each and every one of the many parts required. As a re-

746 sult of careful study and experimental research on all of these matters, taking into account the loads due to wind and sleet, changes in temperature, and all of the other factors, designs have been worked out on a sound engineering basis. By placing the results of this work in the form of standard specifications, the Associated Companies are advised of the most economical and efficient arrangements for meeting the various conditions. By this standardizing, costs of materials are reduced and more prompt deliveries are made possible.

Standard specifications prepared by the General Staff and covering in great detail all of the work of building pole lines from the smallest two wire line to the heavy 60 and 80 wire lines are used by each of the Associated Companies throughout the United States.

A long treatise could be written about the continuous and exhaustive study by the General Staff of the preservative treatment of poles, crossarms and other wood used in outside plant construction. The character, quality and quantity of preservative material, detailed methods of impregnation, variations in treatment required for different kinds and classes of wood, effects of seasoning, and the economics of preservation have all received complete consideration and the Associated Companies have been furnished with most valuable engineering data and specifications embodying the results of all of this work.

While, in general, present conditions do not justify the use of reinforced concrete poles or other substitutes for wood, investigations are constantly being made so that at any time when the cost of wood poles or other conditions make it desirable to use some material other than wood, full engineering data and experience will be available to enable the Associated Companies at once to proceed intelligently in such use.

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Similar development work to that described above for pole lines has been done and is constantly going on with reference to all other parts of the outside plant. Underground conduit and cable construction, aerial cable and twisted pair distributing plant, and many other similar subjects are all continuously studied, and all necessary information furnished the Associated Companies advising them as to the best practices in all these matters.

All new suggestions, whether arising here or abroad, whether coming from the engineers of the General Staff or elsewhere, are studied and tested with great care and, if found to have a proper place in the telephone system, are incorporated in the specifications so that, at all times, they represent the best practices.

Handbooks are prepared whenever the conditions are such that the Associated Companies would benefit by having the specifications in that form for use by their field forces. They are in general use by all of the Associated Companies including the Southwestern Company. Appendix "D" contains typical specifications and handbooks.

Standardization has also been extended to various branches of maintenance work. For example, standard specifications, prepared by the General Staff and in the hands of all Associated Companies, describe uniform methods for inspecting pole lines so that poles may be replaced with due regard to the importance of each line, its exposure to the elements, and the wire loads which it carries. Specifications for economically reinforcing poles which have decayed an excessive amount near the ground line have been developed, standardized and placed at the disposal of the Associated Companies.

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There are hundreds of specifications, prepared by the General Staff for the various types of outside plant and the materials used therein, which form the basis upon which practically all of the outside plant is built and the materials purchased. The savings resulting from the foregoing are difficult to evaluate but they must necessarily be large, for in the case of the Southwestern Company

alone, these specifications enable them to construct and maintain, in the most economical manner, outside plant at the present time valued at over $8,000,000.

Interference from Electric Light, Railway and Power Lines.

The disturbing noises which were experienced on telephone lines, usually as a result of their proximity to neighboring telegraph and telephone wires, were so greatly increased by the introduction of the electric light that unless a remedy had been found, further extension of the telephone would have been impossible.

The General Engineering Staff worked upon this problem for years and in course of time found a satisfactory solution for each one of the difficulties encountered.

Two wires for each circuit instead of one greatly helped to overcome the troubles but this was not a complete solution. Years of further work resulted in the transposed metallic circuit for open wires and a special method of twisted pairs for cables.

749 As new systems of electric light, railway and power circuits were introduced the character of the difficulties changed and their magnitude greatly increased, so that, for each change in the art of transmitting strong currents, the telephone art had to be modified to prevent service from being destroyed.

In general it may be said that the work of the Staff has been continuous and arduous, keeping pace with the growth of electric light and power systems, and that, while we have now before us many unsolved problems growing out of recent development in railway and power work, the situation in general is well in hand.

It is impossible to assign a definite value to this service rendered to the Southwestern Company, but the work and the results are of such a vital character that the savings, if they could be evaluated, would be very great indeed, for unless these results were obtained, the telephone would be restricted to a small number of wires of moderate length in each locality, and anything approaching a comprehensive telephone system would not be possible.

Another phase of the relation of high tension light and power wires to telephone wires is the hazard to life and property growing out of the possibility of contact between the two classes of wires. The Staff attacked this problem in two ways: First, by developing protective apparatus for installation at sub-stations where the line is exposed to outside hazard; Second, by adopting proper rules for outside construction in order to avoid the trouble at its source.

750 For the Associated Companies the matter of arriving at standards of construction involving relations with light and power wires was greatly simplified because the General Engineering Staff was in a position to act for all of them. On the other hand, the innumerable local light, railway and power companies could act only through national associations meeting infrequently. The Staff took up methods of standard construction with these national associations and, after several years of work, arrived at an agreement covering a large part of the questions at

issue. Further questions have recently come up with reference to these matters and the General Staff is carrying on the work. The Staff has also worked with representatives of the electric railways of the United States on methods covering the joint occupancy of poles, so far as it relates to electric railways, with results that will benefit the Associated Companies. The Staff, representing all of the Associated Companies has studied and fully discussed with representatives of the steam railroads of the United States, the question of proper and economical methods for carrying telephone wires across such railroads. Standard specifications describing the results of this work have been agreed upon and issued. Experience with these national bodies has brought out clearly the great advantage of the General Engineering Staff to the Associated Companies, as it not only saved for each of them years of difficult and annoying work, but it has indicated that, in all probability, without this centralized method of handling the problem, no proper standards could have been arrived at.

An exhaustive investigation of inductive interference on
751 telephone circuits, due to parallel high tension power circuits, is being carried out in the territory of one of the Associated Companies. The matter having come to the attention of the State Commission having jurisdiction in the territory in question, a committee was formed, under the auspices of the Commission, on which are representatives of the Commission, the telephone company, the telegraph companies, and the power companies. The telephone part of this work is being directed by representatives from the General Staff.

The results of this work, which is still in progress, will be of the greatest value to all of the Associated Companies. The inductive disturbances are being considered comprehensively, their nature and magnitudes ascertained, and studies made of the effects of changes in the telephone wires and equipment, and in the power wires and equipment and methods of operation, and from these tests most complete data will be obtained as to how to meet the inductive disturbances which are produced by the extra high potential power circuits which have recently been extended so greatly.

In connection with the subject of national standards, the work of the General Staff in connection with the Electrical Code of the National Board of Fire Underwriters is notable. This code is amended every two years and prescribes rules and methods which must be followed wherever electrical construction is undertaken which might affect a fire hazard insured by any insurance company in the United States. A branch of the General Staff is constantly following this insurance code, studying all developments per-
752 taining thereto so as to be ready at the proper time to lay before the National Committee any and all facts and arguments necessary to guide them in their legislation respecting matters affecting the interests of the Associated Companies. In this way we co-operate harmoniously with the insurance authorities and the other National bodies so as to produce a reasonable set of rules with a minimum of hardship to the Associated Companies.

From the nature of the case the savings resulting from all of this work cannot be definitely evaluated, but I know that they are of the greatest value to the Associated Companies, including the Southwestern Company.

Electrolysis.

Electrolysis, or the destruction of underground metallic structures by the action of electric currents coming from street railway systems and returning through the ground to the power station, is a trouble familiar to all having to do with any extensive system of underground cables. This matter has been the subject of much study by the General Staff, and from time to time the Associated Companies have been advised as to the best and most effective methods of meeting this difficulty and much special engineering advice has been given to Associated Companies with reference to this question. At the present time important studies and negotiations are being made by the General Staff looking to meeting electrolysis conditions that, with the growth of both traction systems and telephone systems, are requiring further constant attention. In this work the General Staff is co-operating with other utility
753 representatives through the American Electrolysis Committee.

Work in Connection with the Insurance Department.

The American Company maintains an Insurance Department for the benefit of the Associated Companies. In co-operation with the General Engineering Staff, this Insurance Department has worked out standard arrangements and standard types of construction for telephone buildings, and standards for the maintenance and inspection of these buildings, so as to reduce the fire risk and insurance rates to a minimum and to insure the safety of the telephone service and of the employees.

Inspection of the buildings of the Associated Companies are made from time to time by the Insurance Department and advice given as to improving conditions if any defects are found.

The Insurance Department has made available for the Associated Companies standard forms of fire insurance policies which offer better protection to the property than did the various forms of policies previously used.

As a result of this work, large reductions have been made in the insurance premiums paid by the Associated Companies. In 1915 the average insurance rate which the Associated Companies paid was less than 50 per cent of that paid in 1910. While perhaps certain other factors have been at work which have contributed somewhat to this reduction in insurance premiums, there is no doubt that the work of the Insurance Department has contributed very largely to the result. The value of the services, not only in reduced premiums, but also in improved conditions, is great.

754 Development of Improved Traffic Methods.

The term "Traffic," as used in telephone practice, relates to the connecting and disconnecting of lines, including subscribers' trunk and toll lines; to the routing of calls so as to produce the most prompt connection over the most direct and feasible routes; to the grouping of wires in the most efficient and economical units for interconnection; and to the most efficient loads for different classes of circuits and for operators at the various classes of switchboard positions.

Traffic work also includes the establishment of rules providing the most prompt and economical methods of working for operators of all classes; the determination of the constantly changing requirements of the service from the subscriber's point of view, whether upon local, trunk or toll lines; the development of proper and significant records covering service, efficiency of operation and data for engineering purposes; and the formulation, dissemination and application of significant data and statistics pertaining to almost innumerable detail matters relating to the interconnection of telephone lines.

In a great many cases the successful development and standardization of the numerous parts of the telephone plant would be impossible unless preceded by the careful study and development and standardization of traffic methods.

The accuracy of the traffic data and the efficiency of the traffic methods exercise a fundamental influence upon the character of the service rendered to the public, the costs of handling the
755 traffic, and the costs and efficiency of the plant. Traffic methods affect very largely the size and arrangement of switchboards, which in turn affect the size and arrangement of the central office buildings. In the same way the degree of efficiency of the traffic methods has a great influence in determining the number of trunk and toll lines which, in turn, affects the number and size of the cables, conduits, pole lines, and open wires.

Traffic problems are intricate and difficult, and unless the plant is constructed so as to conform to the best traffic methods it will not successfully perform its functions, however solidly it may be constructed or however admirable it may be in other respects.

For this reason the General Engineering Staff has recognized the importance of traffic studies and methods, and as will be seen by reference to the diagram of organization (Appendix B), it maintains a large group of engineers devoted entirely to this branch of the work. On this subject, as well as the others discussed elsewhere, volumes would be required to describe comprehensively the activities of the General Engineering Staff on behalf of the Associated Companies.

Improvements in the Efficiency of the Toll Plants for the Associated Companies.

The Staff, through its work at headquarters, and through its engineers working in the territories of the Associated Companies, has devised and applied improved methods for establishing toll centers through which the toll traffic for the surrounding territory
756 can be received and distributed most economically, and determining which is the most efficient grouping of the toll lines, and arranging the plant so that these groups can be established. In connection with this work, the trend of the traffic, and the most economical and expeditious routing are determined. The work having primarily to do with the flow of traffic over an intricate net work of wires, its advantages are largely manifested in the plant itself. There are also improvements in the speed and certainty of the connections. The economies and improvements in the service have varied with the amount and character of the toll traffic and toll plant of each territory, but, taking the country as a whole, the savings have been very large. It is not possible to trace all of them directly, as some were intricate in their nature, resulting, in general, in improved service to the public and in enabling the companies to handle their growing business for a longer time upon the existing plant, and in many cases enabling them permanently to handle an increased amount of business with a given plant, thus reducing the plant investment and the annual charges thereon. There are trustworthy statistics showing that the savings, for the Associated Companies as a whole, from the applications which they have made of the results of the above work, amount to a very large sum.

The work which the General Staff is doing along these lines is continuous, and engineers are devoting their entire time to the consideration of problems affecting the efficient and economical use of toll plants. From our knowledge of the subject and the work now under way we expect to devise still further improvements resulting during the next few years in further large savings, at the
757 same time making additional improvements in the quality of service rendered the public.

Improved Traffic Records.

One of the most important factors in giving the highest grade of service and in the efficient operation of the telephone system is the determination of methods for making significant and accurate records of the service being rendered and the operating work accomplished. This whole problem has been the subject of most careful investigation on the part of the General Staff with very successful results. For an illustration take the records of work done by operators, technically known as "peg counts." These records form the basis not only of the number of operators that are provided but also of the amount of switchboard and building space. It is not a simple matter to obtain accurate records of this sort, and when we

consider the large expenditures for operators' salaries and for buildings and equipments, it will be evident that the telephone companies may easily waste large amounts of money if accurate records are not available. If the peg counts are in error by showing more work to be done than is actually the fact, money will be wasted by providing more operators, equipment and building space than is necessary. If, on the other hand, the records are in error by indicating less work to be done than is actually the case, the service will suffer and mistakes may be made in the engineering of buildings and equipment which will be very expensive to rectify. Investigations carried on by the General Staff have shown that
758 in the past many peg count records were not sufficiently precise. After a careful study of the problem, improved methods for making and checking peg counts have been devised. It is now possible to obtain very precise records of this sort and this has been an important factor in improving the efficiency of operating work. Not only have the Associated Companies been informed as to the best peg count methods to employ, but engineers from the General Staff periodically visit all of the companies, assisting the people in charge of these records to take all of the many precautions necessary to insure accurate work along these lines.

In order that operating work may be maintained at the proper efficiency, it is, of course, necessary that accurate records be available in regard to all the significant features of that work. It is not enough for instance, to simply count the calls handled by the operator, since different classes of calls require very different amounts of the operator's time. For the complex nature of operating work, it is a difficult matter to determine with precision the relative amount of work required to handle calls of different classes. The General Staff has made careful investigations of this general subject and has conducted series of experiments over several years, with the result that methods have been made available to the Associated Companies by means of which the operating work for handling all classes of calls can be equated to a unit basis. By means of these and other improved records, it is now possible to determine more precisely than has heretofore been practicable the operating work accomplished and the Associated Companies
759 are now in a better position to make those comparisons between the operating work in different offices which are so essential to the efficient administration of that branch of telephone work. With the constant improvements that are being made in operating practices and equipment, it is necessary to study continuously all these matters relating to operating work and to revise from time to time the various factors employed. The General Staff has assigned a group of experts to work of this sort and it is being carried on continuously.

In the matter of service, the Bell companies do not wait for complaints from subscribers to indicate that conditions are not satisfactory, but they make continuous routine tests of the service so that they are informed at all times as to just what grade of service is being given. The General Staff has made thorough investigations

of all matters relating to service and the observation thereof, and the Associated Companies have been informed as to the best practices to employ in all matters affecting service observations. As in the case with peg accounts, the work of the General Staff does not cease with the issuing of circular letters and bulletins describing the best methods to be employed, but engineers regularly visit all of the Associated Companies informing them of improved methods, learning the results of their experience and advising those in charge of this work for the Associated Companies as to all the precautions necessary to insure accurate service observing records. These representatives of the General Staff also discuss with the Associated Companies all the various problems involved in giving the highest grade of service, and they make suggestions as to methods of improving the service which are the results of their own experience or that of other Associated Companies.

760

Development of Standardization of Improved Traffic Engineering Practices.

The traffic engineering work underlying the design of a telephone switchboard is a most important matter, and if the best methods are not employed, the telephone company may be subject to large losses due to the provision of equipment of the wrong kind; or an unnecessarily large and the wasteful amount; or an insufficient amount which would hamper the operating force and render them inefficient and impair the service.

Engineers on the General Staff have given much attention to this matter with the result that information has been supplied to the Associated Companies enabling them to engineer their switchboards and buildings so as to obtain the most economical arrangement consistent with good service and the efficient employment of the operating forces. General Engineering Circular No. 644, attached to this statement as part of Appendix D, is one of the circulars issued in connection with the standardization of traffic engineering practices, and gives a good idea of the importance and value of certain of the work along these lines.

761 Improvements in Local Operating Practices and Equipment.

In view of the prime importance of giving a high grade of local telephone service, all questions relating to such service, operating practices, and equipment receive thorough and broad consideration by the General Staff. Operating methods are thoroughly studied and those selected as standard which give best service to the public. Improved methods have been worked out for determining the amount of traffic to be handled at all times and the effective adjustment of the operating force to this traffic. Much attention has been given to the equipment provided for the use of the operators and marked improvements have been made in the switchboards and associated apparatus. By the introduction of improved cord circuits and trunks for the use of "A" and "B" operators, by improve-

ments in the use of "A" multiple, and multiple answering jacks and lamps, and by numerous other improvements in the switchboard arrangements, the work of the operators has been facilitated, and the service improved. The Southwestern Company, in common with all the other Associated Companies, has benefited largely, as a result of the work done by the General Staff along these lines, and the annual expenses for local operating would be at least $140,000, greater than is now the case had these various improvements not been worked out and adopted.

The Engineers of the General Staff are continuously engaged in the study of all problems relating to local operating practices and equipment, further improvements are constantly being
762 made and may confidently be expected to continue.

Improved Toll-operating Methods and Equipment.

With respect to the increased efficiency in operating toll lines brought about by the work of the General Staff very substantial results were obtained in reducing and simplifying the work of the operator, improving the promptness of connection, and increasing the effective use of the lines. In an important class of this work the operators' capabilities were increased materially without making the work in any way harder for them, the time required to establish the connection was reduced more than one-half, and the effective use of the toll line plant was materially increased. Marked improvements have also been made in the toll switchboards in the last few years, and many important features have been added which improve the service and facilitate the work of the operators. For the Southwestern Company there is a saving of a least $27,000 a year from the use of these improved toll operating methods.

I have given above only a very few out of a large number of engineering studies, projects and developments which have been successfully carried out by the General Engineering Staff for the benefit of all of the Associated Companies, including the Southwestern Company. Those which I have given illustrate the general nature of the work which the Staff is doing for the Associated Companies. During the last five years we have completed over 700 subjects for them, nearly all of which were of substantial value to the Southwestern Company. A partial list of these is given in the
763 schedule which is attached hereto and marked "Apendix E."

The telephone art is not by any means in a finished or completed state. On the contrary the present problems upon which the General Staff is working are of as great importance and larger in number than those at any time in the past. The General Staff has now on hand more than 400 studies, projects and developments nearly all of which are of very great value and importance to the Southwestern Company. A partial list of these engineering matters is attached hereto and marked "Appendix F."

To illustrate some of the methods which are employed in placing the results of these investigations before the Associated Companies, I am attaching hereto engineering bulletins, specifications and

handbooks relating to plant and traffic matters marked "Appendix D."

To show the scope and comprehensiveness of the matters dealt with in engineering bulletins and specifications issued by the General Engineering Staff, I am attaching hereto as "Appendix G," a partial list of the circular letters and specifications that have been issued to the Associated Companies.

764 Class 2.

Specific Work Done by the General Engineering Staff on Problems for the Southwestern Company, Particularly Those Arising in the City of St. Louis.

Under the arrangements existing between the American Company and the Southwestern Company, the latter is free to call upon the General Engineering Staff for consulting engineering advice and assistance in connection with any problems confronting them. The value of this, and the extent to which they avail themselves of this service will now be shown.

Fundamental Plan—St. Louis.

The nature and importance of fundamental plans have already been touched upon and the work which we have done in advising the Southwestern Company about the methods of making and using fundamental plans has been mentioned briefly.

In addition to sending complete information to all of the Associated Companies in regard to the methods for making and using fundamental plans, the General Staff has, at the request of the Southwestern Company (or its predecessor, the Bell Telephone Company of Missouri), made or actively assisted in the making of the several fundamental plans for St. Louis.

A fundamental plan of St. Louis was made in 1902-3. On account of the rapid development of the business a revised plan was made in 1905 when there were about 23,000 Bell stations in greater St. Louis.

765 The indications of this latter plan were followed by the engineers for several years. In 1910 the engineers of the Missouri Company were confronted with the problem of relieving two of the St. Louis offices and two partial fundamental plans for the sections of the city involved were prepared and a complete fundamental plan was made in 1914 based on 208,000 stations in greater St. Louis in 1930.

As further illustrative of the manner in which this work is done I will outline the more important parts of the work which we did in this latest St. Louis development study and fundamental plan.

This work was undertaken at the request of the Southwestern Company and carried out by the General Staff in co-operation with the officials of the Southwestern Company.

The General Engineering Staff undertook the St. Louis development study having available the result of all the preceding work in

creating and developing the art of making fundamental plans and development studies. In addition, they brought to bear on this study all of their experience in making similar studies throughout the United States.

It was first determined that in the case of St. Louis the best date for which to make the new plan was the year 1930. This means that in the planning of many of the fundamental parts of the plan, such as subways, buildings and switchboards, such work is done with due regard to the requirements of the future, having as a guide for such requirements the estimates made for the year 1930. By such a plan the Southwestern Company is enabled to anticipate and to provide in advance for the needs of the growing business of St. Louis so that as demand for telephone service arises it can be sup-
766 plied promptly, effectively and economically and in such a manner that the various parts of the plant, when constructed, will fit together into a harmonious whole.

The fundamental engineering plans are based upon the business forecast. This includes an estimate of the population of St. Louis expected in the year 1930. It requires that the number and the character of the telephone stations be forecast and that their probable distribution be determined. The character of the telephone stations must be determined by classification into business, residence, party lines, direct lines, extensions, private branch exchanges, etc. This gives a basis for estimating the amount, character and destination of the traffic. These factors, when determined, have an important effect in fixing the location, size and character of the trunk cables and subways, as well as the number of switchboard sections required, the location and size of the buildings, and the size of the lots on which the buildings are to be erected, and many other factors that might be mentioned.

The forecast of the future population of a city is a study in itself. The General Staff keeps informed continually with regard to all matters affecting growth of all parts of the United States. When we take up the estimate for a city like St. Louis we consider the tendencies affecting the whole great area which has relations with St. Louis. We also consider in detail the local conditions, plans and prospects of all sorts. The advantages of St. Louis as a center for manufacturing, jobbing, retail, professional, and home life, etc., are thoroughly studied. As a result of such consideration, an estimate was made of the probable future population of St. Louis.
767 A further and more detailed estimate was then made of the future population in the various parts of the city. Changes arising both from the development of land toward the outskirts, now vacant, and also changes of character within the regions already well settled being considered. This forecast of the number and character of future population was carried down to the fairly small divisions known as homogeneous sections.

A great many tendencies which we have observed in cities throughout the country were carefully considered with reference to their application at St. Louis. Tendencies of former excellent residence quarters to change, for example, into boarding house districts un-

der certain conditions, the increased tendency to live in apartments, and the probable location of these apartments, the effects of automobile and rapid transit developments, and the effects of factory districts, of freight yards and their probable growth, are examples of the considerations which were applied to St. Louis in estimating the population and character of the various parts of the future city.

In view of the importance and complexity and difficulty of making such a business forecast as is required to form the basis of these fundamental plans, a systematic investigation and study was undertaken by the General Staff to determine exhaustively in great detail the present and probable future development of the City of St. Louis which would be expected by the year 1930. This included not only the work of forecasting the population as above described, but also involved a detailed house to house study of the entire City of St. Louis and its suburbs. Carefully selected representatives
768 of the Southwestern Company who were thoroughly familiar with each locality co-operated with members of the General Engineering Staff and visited and surveyed each residence, apartment house, factory and business building, and other edifices within the City of St. Louis and its suburbs.

The number of residences, apartments, etc., and the approximate rent paid for each, were determined. The character of telephone service associated with each of these classes was noted and the number of vacant houses and the lots was recorded. Business places of all kinds, their character, size and location were noted and the character of the present telephone service was recorded. All other data were noted which might throw any light upon the nature of the business at present or during the period included in the forecast.

Many conferences were held with the officials of the Southwestern Company on these and on other matters bearing on the probable future use of the telephone. In these conferences we discussed with the officials of the Southwestern Company the existing conditions at St. Louis and prospects for the future. The representatives of the General Staff supplied information as to the existing conditions at many other cities whose size or telephone development might be of assistance in studying the St. Louis problem. Furthermore, they furnished much information regarding the results of careful development studies and fundamental plans which had been worked out for such other cities.

As a result of these conferences, and taking all of the "house count" and other evidence into consideration, the representatives of the two companies decided upon the "commercial appraisal" for each homogeneous section of the city, that is, they agreed
769 upon the probable future use of the telephone by each class of family or business in each small section of the city of homogeneous character. From these commercial appraisals, combined with the forecast of population, was produced the development study.

The fundamental plan for St. Louis was based upon such a development study as has just been described and was produced

by applying engineering principles and methods which has been developed by long and careful studies by the General Staff. This engineering work involves the proper practice and costs of a large part of the telephone plant and operating. All the more promising combinations of future offices and districts were laid out and the costs from the present to the future were computed. In this work also the experience which we had in other cities was very valuable in its application to St. Louis.

The fundamental plan showed that the expected stations and traffic in 1930 could be handled most economically by establishing, as required, branch offices at two whole new locations, by the construction of four new and adequate buildings to house enlarged central offices now located in rented quarters, by the construction of three new buildings near existing but outgrown offices, and by enlarging or adding to the equipment of several other existing central office buildings.

Large sums have already been invested, largely based upon the fundamental plans for St. Louis and the future expenditures will be still greater. An expenditure of $11,000,000 has been or will be made for plant in St. Louis whose location, amount, and broad characteristics have been determined by these fundamental plans. It would obviously be easily possible to waste large sums of money in view of the amounts involved if an adequate fundamental
770 plan were not available. It is clear that a saving of even a small percentage of the expenditures would be a substantial matter.

Transmission Study.

In connection with the latest St. Louis fundamental plan, a transmission study for that city was made by the engineers of the General Staff in co-operation with the local engineers. Several engineers of the General Staff visited St. Louis in connection with this study which was a thorough one and utilized data made available by the fundamental plan. As a result of this study it was demonstrated that it would be possible to extend further the use of fine wires in both trunks and subscribers' loops, with the result that an average annual saving will be effected during the next fifteen years or more than $2,500 over what the cost would have been without the data derived from this particular study.

Buildings and Central Office Equipment.

During the past few years the Southwestern Company erected or made important extensions to many telephone buildings and installed many new complete central office equipments or extensions to existing equipments. The General Engineering Staff has advised on much of this work. Frequent conferences were held between engineers representing the two companies.

The following is a list of the building and switchboard projects in St. Louis upon which the engineers of the General Staff have worked for the Southwestern Company.

771

Office.	Cost.
Sydney—Building Study	
Tyler—Building studies	$37,000
Specifications for additional Central Office Equipment	25,000
Bomont—Building study	18,600
Complete Central Office Specifications	44,000
Study for Extension to the Present Building	48,000
Grand—Building Study	75,000
Complete Central Office Specifications	22,000
Cabany—Building Study	30,600
E. St. Louis—Building Study	43,000
Complete Central Office Specifications	70,000
Lindell—Building Study	85,000
Complete Central Office Specifications	70,000
Forest—Building Study	169,000
Complete Central Office Specifications	29,000
Building Extension Study	54,500
Power Plant Study	11,000
Olive—Complete Central Office Specifications	17,500
North—Building Study	51,000
South—Building Studies	27,000
Main—Relief of Main Office District Building	31,000
Equipment	300,000
	700,000
Total cost of new switchboards including additions	$1,174,200
Total cost of new buildings including additions	784,000
Grand Total	$1,958,200

772 As will be seen from the foregoing, engineering advice and assistance has been given during recent years in regard to buildings and central office equipments aggregating in cost over $1,900,000.

Protection of Life and Property and Insurance.

The Insurance Department of the General Staff, working in co-operation with the Engineering Department, has inspected and made recommendations of the following buildings in St. Louis. In addition, 126 maintenance reports have been received and carefully considered and, where necessary, recommendations were made in regard to them.

Inspected in Year 1912.

Supply Yard.
Beaumont Exchange.
Euclid Exchange.
Forest Exchange.
Cabany Exchange.
Grand Exchange.
Lindell Exchange.
Main and Olive Exchanges.
Sidney Exchange.
South Exchange.
Tyler Exchange.
Building, Tenth and Pine.
Building, Sixth and Locust.
Building, 919 Pine.

773 Inspected in 1916.

Riverside Exchange.
Beaumont Exchange.
Forest Exchange.
Cabany Exchange.
Grand Exchange.
Lindell Exchange.
Main and Olive Exchange.
Sidney Exchange.
Tyler Exchange.
Colfax Exchange.

In addition to the above engineering assistance on new projects the files of the Engineering Department of the General Staff show that during the last few years, hundreds of other engineering matters relating to central office equipments and buildings have been studied by us, for and at the request of the Southwestern Company, and engineering advice has been given on all of these matters. Some idea of the importance and range of the subjects discussed will be obtained from the following partial list giving the subjects of some typical cases:

Equipment.

The size of storage batteries to be installed in connection with the Olive Office to relieve the Main Office battery of this load together with all P. B. X. drains.

Advice in regard to the use of keyless trunks, and also as to the number of trunk circuits to be provided together with the necessary keyshelf and section drawings.

774 Certain features of the wire chief's desk for Cabany Office, St. Louis.

Advice in regard to machine ringing trunks in connection with an outgoing trunk circuit at the Cabany Office, St. Louis.

The use of certain types of cordless P. B. X. switchboards.

Information regarding the equipment necessary at the central office for handling toll calls from three-slot coin boxes.

Advice in regard to relay adjustments for certain private branch exchange trunk circuits.

Advice regarding requirements for motors for central offices.

Advice regarding changes in re-cording trunks in order that they might operate satisfactorily with earlier types of toll cords.

Advance information regarding fire protective apparatus to be provided in central offices.

Advice regarding double pulley cord weights for long cords.

Information regarding mercury arc rectifiers.

Advice in regard to the moisture proofing of relays and coils in humid places.

Improvements in peg count apparatus and circuits.

Substation Equipment.

At the request of the Southwestern Company, the General Staff has, from time to time, studied and advised in regard to many matters of great importance concerning their substation equipment.

Various specific difficulties encountered in St. Louis have
775 been carefully studied and advice has been given concerning them. Following is a short list of typical items of work of this sort.

Routine tests of dry battery cells and advice as to the most economical plans for making them.

The best type of dry cell to use for various purposes.

The proper adjustment of coin boxes to meet the various conditions of ground potential.

Information regarding telephone booths, including sound-proof features and methods for automatically closing an electric light circuit with the folding door booth.

Outside Plant Matters.

The files of the Engineering Department of the General Staff show that the Southwestern Company has requested advice from the General Staff in regard to very many specific matters related to outside plant. Many of them had to do with the proper construction to employ to meet peculiar conditions of specific cases in St. Louis. In other cases the question involved concerned the application of standard arrangements to conditions more or less general to the Southwestern Company's territory. Below are given a few typical cases of advice in regard to outside plant matters given at the request of the Southwestern Co.

A cable study was made for St. Louis showing the most economical arrangement of the entire cable plant throughout the city to care for the subscribers then existing and to make provision for future growth.

776 The use of special sizes of copper wire for exchange distribution.

The best and most efficient methods of attaching and terminating twisted pair wires.

Information regarding coloring the insulation for rapidly identifying wires in cables to facilitate testing and maintenance.

The best type of cross-connecting wire to use in distributing frames.

The requirements which cedar poles should fulfill in order to obtain the best results from their use.

The supply of chestnut poles from certain districts.

The proper field of usefulness of iron wire and small gauge copper wire for toll lines.

Discussion of certain matters concerning high tension crossings.

Advice in regard to rosin flux wire solder and soldered joints.

The comparative merits and economy of plain and galvanized pole line hardware.

The use of special pothead wire.

The use of load-antimony cable sheath—to make sure that the fullest advantage was being taken of the economy of this material.

The best type of cable racks and books.

The use of patent guy anchors and the types we have been able to approve.

Joint use of poles by telephone and high tension wires and cables.

Insulators for open wire lines.

Preservation of poles by the brush treatment.

777 Information as to certain types of aerial cable rings with advice as to the patent situation.

In addition to the above work outside plant engineers have visited St. Louis frequently at which times they have discussed many matters relating to the outside plant and advice has been given in regard to many questions of this sort. Also discussion of questions with advice has occurred during visits of the Southwestern Company's Engineers to New York.

Transmission and Protection.

On the subject of transmission and protection, many specific problems arising in the territory of the Southwestern Company and in St. Louis have formed the subjects of requests for engineering advice and assistance from the General Engineering Staff. Under the heading "Transmission" we include all questions concerning the "loudness" and "clearness" of speech transmission. The general subject of protection has to do with the safeguards provided for the users of the telephone, the employes of the telephone company and the public against accidents due to electric shock and the prevention of fires in the telephone plant or elsewhere due to electrical causes. The electrical currents employed in telephone work are not such as to cause hazards to life or property, but proper protection must be provided against lightning and against accidental contact with light and power wires. Many questions in regard to transmission and protec-

778 tion have been considered by the General Staff for the Southwestern Company. A few cases cited below will illustrate these matters.

The transmission efficiency of various types of circuits and apparatus. From time to time complete information on this subject has been supplied to the engineers of the Southwestern Company. These data have been of fundamental value in the design and construction of the telephone plant in St. Louis and other parts of the territory so as to obtain a satisfactory grade of transmission in the best and most economical manner.

A tentative study of the application of loading to the St. Louis cables was made by the St. Louis engineers. This study was reviewed and checked by the General Staff and modifications and improvements suggested. This study illustrates one of the important methods by which the General Staff renders its assistance. In preparation for this study one of the St. Louis engineers spent a month in New York where he was instructed with reference to the application of the latest loading and transmission facts and data to the complex plant required for giving service in St. Louis. In 1912 the St. Louis engineer spent another month in New York acquainting himself with the numerous improvements in transmission matters which had been made since his earlier visit. As a result of all this work a very complete loaded cable system has been installed at St. Louis which has greatly benefited the service given to subscribers and which has brought about these important results at a minimum cost.

779 In 1913 several engineers of the General Staff spent several weeks in St. Louis, at the request of the Southwestern Company, making careful investigation of transmission conditions in certain specific cases where trouble had been experienced. Conditions were investigated in fourteen central offices and in the trunk plant connecting these offices. The causes of the transmission trouble existing were ascertained and recommendations made to enable the trouble to be overcome. Thorough investigation was also made of the local toll switchboard and the toll switching trunks connecting the toll board with the various local switchboards.

Advice as to the best method of reducing noise on party line subscriber's circuits in St. Louis.

The proper size of conductors for a trunk cable between Western and Kirkwood offices, St. Louis exchange.

Extra light loading for the St. Louis-East St. Louis cable and also for toll entrance cables in general.

Detailed instructions for the use of a new type of inductance bridge and demagnetizing set which had been developed by the General Staff.

Method of transposing phantom and physical circuits on joint lines.

Method of balancing phantom circuits.

The best methods of protecting aerial cables from the effects of lightning and high tension crosses on the open wires connecting with them.

The proper construction and protection of lines subject to peculiar exposures on the rights of way of electric railways and power companies.

Use of No. 61 protector mounting on grounded open wire lines.

Advice in specific cases as to means for overcoming in-
780 ductive interference from paralleling high tension lines.

Advices in specific cases of special arrangements for phantom transpositions.

Traffic Engineering and Operating Matters.

In connection with the specific buildings and central office equipments which the Southwestern Company has referred to the General Staff for advice, important traffic engineering problems, both toll and local, have been involved and these have been carefully considered. Inasmuch as there is a list of these buildings and equipments under another heading, it seems unnecessary to repeat the list here.

At the request of the Southwestern Company, a traffic expert from the Headquarters Staff spent five or six months in St. Louis in 1910 investigating traffic conditions in co-operation with the Southwestern people and advising with reference to the best methods for obtaining reliable traffic records, for making the best distribution of the operating forces, for establishing adequate service testing arrangements, for introducing the best traffic practices and operating methods and for making special tests of service. Investigations of maintenance conditions were also made and suggestions given as to the best way for handling such work in its relation to the traffic. Many other points were covered at this time, but those named above will be sufficient to indicate the scope of the work which was of great value to the Southwestern Company. In connection with this work other experts from the General Staff visited St. Louis several times during 1910.

781 Among the many specific traffic engineering problems which the Southwestern Company has referred to the General Staff, the following list includes certain typical illustrations:

A study was made to determine whether multiple answering jacks and lamps would prove in for the Olive, Grand, Bomont and Monroe Offices, St. Louis.

Assistance was rendered the St. Louis Company in making plans to provide additional plant, particularly switchboard equipment and local trunk lines, to care for an unusual growth in traffic several years ago.

Careful investigation was made showing the relations of various party line systems and different types of trunk circuits as applied to St. Louis condition.

At the request of the Southwestern Company, consideration was given to special methods employed in St. Louis for grading the work of the operators.

A large amount of general and valuable information has been furnished the Southwestern Company in regard to general employment conditions throughout the United States.

Specific recommendations have been made in regard to improved records and reports for the Southwestern officials covering all phases of the traffic work.

Advice has been given in regard to making up peg count and other traffic records, insuring their accuracy, in connection with which work engineers from the General Staff have visited St. Louis.

782 In connection with service observing methods and equipment, and operating questions in general, an engineer from the General Staff recently spent some little time in St. Louis going over all these matters on the ground with the Southwestern traffic people.

Advice in Regard to the Best Location of Recording and Service Observing Lines of the Toll Board.

Advice and assistance have been given in regard to methods of quoting inter-company toll tariffs on business handled with adjoining companies, on which work a specialist on this subject from the General Staff co-operated with the local people at St. Louis.

On several occasions engineers have visited St. Louis to assist in the introduction of the new standard local operating practice.

At the recent request of the Southwestern Company, specialists on traffic organizations have visited a number of these cities, including St. Louis, to advise on several serious problems of employment conditions that have arisen.

Patents.

A very large number of patents are owned by the American Telephone and Telegraph Company or controlled by it through its ownership of the American Bell Telephone Company and its contracts with the Western Electric Company. A list of these patents, over 2,600 in number, and held for the benefit of the Associated Companies, including the Southwestern Company, is attached hereto and made a part hereof and marked "Appendix H." In this list are found patents, the subject matter of many of which is of very great importance to the business, and groups of them taken together cover

783 matters of vital consequence in the economy and efficiency of apparatus used by the Associated Companies. To go over this list and to point out the importance of the various groups of patents would require a complete discussion of all parts of the telephone system. A few specific cases, however, will be cited.

The Pupin patents themselves and other patents on the work done by the General Engineering Staff to perfect the Pupin invention and develop it in a practical way are important.

The patent of Scribner, 669,710, covers the most efficient and economical form of substation apparatus and is the standard employed by the Associated Companies.

Another very important group of patents are Athearn, 940,654 and 940,655, and Barrett, 940,658, electrical conducting systems and a system for nullifying inductive disturbances. The subject

matter of these patents provides a practical solution of a very serious telephone problem introduced by certain types of electrical railway working. The patents of Gundlach, 751,501, 762,820, and the patents of Shreeve, 791,655, 863,230, 897,028 and 937,189, together with applications now pending, cover work of very great consequence to the Associated Companies.

Apart from all the patents referred to above, and not included in the list attached hereto, there are several groups of patent applications which cover broadly and in detail the apparatus and the methods and systems and various kinds of connections required in improving and transmission of speech, so as to make it possible to talk with ease from St. Louis and other points in Missouri to all parts of the United States, including San Francisco, Los Angeles, San Diego and other points on the Pacific Coast, as well as to
784 give good and economical service throughout the territory which they operate themselves. These patents and patent applications cover developments of the utmost importance to the Southwestern Company and the other Associated Companies, and the rights to use them and to be protected in such use are granted to the Associated Companies as one of the services which they receive from the American Company.

There is another large group of these patents which covers ground which we must traverse in our prospective developments of switchboards and other important apparatus, and the possession of these patents gives us a free field in which to work out the very best system for the future needs of the Associated Companies. A very large number of other patents cover important devices and methods of working and of construction. Some of these, considered by themselves, might not appear to be of controlling importance, but taken in connection with all of the others, they are essential to the economical working out of the system as a whole.

These patents cover telephone systems and apparatus of all kinds which are used by the Associated Companies and apply not only to the most efficient methods and apparatus as viewed from the construction standpoint, but they also represent the most efficient apparatus and systems from the traffic standpoint, and also from the maintenance standpoint. That is, they represent systems which very greatly reduce not only the traffic costs, but also the maintenance costs.

But aside from all this, there is one point which should be borne in mind in judging of this list of patents. It is this: These patents cover the system which the Associated Companies are
785 now using. Some of them cover methods which are to be used in the future. These latter, together with the patent applications, insure that an unrestricted field of development is thus kept open for all the Associated Companies. The other patents insure the Associated Companies in the unmolested use of the system which they now have.

Too much importance cannot be attached to this point because any one out of hundreds of these patents, in hostile hands, might be made the basis of a successful suit against an Associated Company.

such as the Southwestern Company, the result of which would be that most expensive reconstruction would have to be undertaken to remove the infringing item, to say nothing of the expense of defending such suits. Although this item in itself might not be large, yet its relation to the system as a whole would entail enormous reconstruction costs to remove it. The alternative to this, of course, would be the payment by the Associated Company of an immense sum in the form of tribute to the hostile owner of the infringed patent.

As rendering a uniform service of high standard throughout the country is what is being done by the Associated Companies and as these high standards are obtained by the use of the arrangements covered by these patents, it is obvious that if they were all the exclusive property of one of the Associated Companies, they would not be available for the remainder, and that if part of them were the property of one Associated Company, and part the property of another, and still another part the property of another Associated Company, and so on, it would be obvious that no
786 one of them would have the best system. Accordingly, in order that each of the Associated Companies should have the benefit of the best arrangement in each kind of apparatus and system, it is necessary that these patents be held for the benefit of all alike, as is the case.

I will now mention certain other important services rendered to the Associated Companies by the Patent Department of the American Company. That department is prepared at all times to advise the Associated Companies in regard to patent matters so that costly and expensive patent litigation is avoided. The Patent Department takes the necessary steps to see that adequate patent protection is obtained on all new developments so that the Associated Companies may enjoy the free and unobstructed use of such developments. They study all proposed improvements in apparatus and methods so that the Associated Companies may not without proper patent right enter into the use of apparatus or methods as a result of which they might later have infringement suits brought against them and so suffer large losses.

Part of the work done by the Patent Department and the Engineers of the General Staff is the study, as issued, of each new patent dealing with telephony or applying thereto. Each year a very large number of such patents (from 500 to 1,000 or more) are issued in the United States. Each of these patents is carefully studied to determine whether or not it is of interest to the Associated Companies, either as covering something that they are now using, something that they would wish to use, or something which might be of interest or value in connection with development work,
787 either under way or prospective. If of present or prospective interest, the necessary rights are acquired.

While speaking of the Patent Department I will mention one case in particular which was defended by the American Company on behalf of the Associated Companies. It was a patent suit brought against one of the Associated Companies but defended by

the American Company. The suit was for alleged infringement of switchboards employed not only at the central offices but at many subscribers' stations. If we had lost this suit, fully 75 per cent of the switchboards of all the Associated Companies would have had to be abandoned and replaced by those of an inferior type, or the Associated Companies would have had to pay enormous tribute to the owners of the patent. The case was a hard-fought one from beginning to end, and to the very last the outcome was doubtful. The suit was finally won by the telephone company. Had it been lost the Southwestern Company throughout all of its territory would have been hard hit, for whichever alternative they would have chosen in the event of losing, the expense would have been enormous.

As indicating the activities of the Patent Department on behalf of the Associated Companies, the following list taken from our records showing what was done in 1915 is given:

788

Patents issued	168
Applications filed	314
Applications pending at the end of 1915	436
Patents purchased	17
Applications purchased	6
Licenses obtained from other patentees	33
Infringement suits	4
Infringement alleged and litigation threatened	1
Interference proceedings in the U. S. Patent Office	49

The services rendered to the Associated Companies *in* connection with patents and patent matters which have been referred to above are of very great value to all of the Associated Companies. They are of such a nature, however, that it is difficult to assign a definite figure as representing their financial value. I have, therefore, not undertaken to do this, although I know that such a value could be very large.

Service of Other Departments of the General Staff.

I have thus far testified only in regard to the work of the engineering section of the General Staff, in regard to instrument services and in regard to patents and patents services and in regard to some of the work of the Insurance Department. Other services of different classes are rendered by the General Staff, consisting of services of the General administrative officials of the American Company—the President, the Vice-Presidents and the Board of Directors of the American Company; services rendered by the Legal Department of the American Company; services rendered by the Comptroller's Department or Accounting Department of the Amer-
789 ican Company; services rendered by the Treasurer's Department of the American Company.

My work brings me in constant contact with the activities of these other departments and from such contact I am sure that these serv-

ices are of very great value to the Associated Companies. They are, however, of such a character that it is difficult to place a definite financial value upon them, although such value is, in my judgment, very large.

In connection with the services of these departments of the General Staff, there is one case that I will mention briefly. This is a case in which the General Engineering Staff put in a great deal of work in connection with the Legal Department. It illustrates one of the legal and engineering activities in connection with the matter of protecting the interests of the Associated Companies in the matter of high-tension wires. At Lincoln, Illinois, an electric traction company built a 33,000-volt power transmission line in dangerous proximity to a telephone pole line carrying twelve wires of the Associated Company and four wires of the American Company.

This act of the traction company created a serious hazard to the property of the Associated Company and to the lives of its employes and the public, as well as to the property and lives of the employes of the American Company. Legal proceedings were begun in the name of the American Company and conducted without expense to the Associated Company, with a view to obtaining a decision from the Court removing the danger created by the traction company.

This case during a period of more than three years involved
790 a great deal of work not only on the part of the Legal Department of the American Company, but also on the part of the General Engineering Staff of the American Company, and a number of specially engaged outside engineering experts.

The legal and physical questions involved were unusual and this case was conducted knowing that it was a test case and that a favorable decision being obtained by the telephone company would have very great value throughout the territory of the whole United States where these high-tension troubles were becoming acute. A favorable decision was obtained from the Court and the danger removed. All of this was done without any expense whatever to the Associated Company and the decision is one of very great consequence and advantage to all of them.

Instrument Services.

Another service rendered by the American Company is furnishing the Southwestern Company all of the transmitters, receivers and associated induction coils required by that Company for giving telephone service, and repairing and maintaining these instruments.

The average number of stations in service in the territory of the Southwestern Company for the year 1913, as shown by the records, was 82,802. The average number of transmitters and receivers in the hands of the Southwestern Company in 1913 was 178,282. A transmitter and receiver, together with the associated induction coil constitute a set, which is the unit hereinafter employed. Of these sets the average number in use for 1913 was therefore 89,141.

A reserve stock of instruments is maintained by the Ameri-
791 can Company for the benefit of the Associated Companies, to insure a continuous supply of instruments in the event

of fire or flood losses, or stoppage of manufacture by fire, strikes o shortage of materials, or of abnormal demand due to rapid growth This reserve stock has averaged more than 6 per cent. If the South western Company purchased their instruments, in order to have th same guarantee of continuous supply, it would be obliged to main tain a reserve of its own greater than 6 per cent of the number of instruments in use. Assuming, however, a reserve of only 6 per cent they must buy 5,348 additional sets, making in all 94,489 sets.

The regular sets of the type referred to sold in competition in the open market in 1913 for $3.19 per set. The instruments for use at central offices and private branch exchange switchboards are of a more expensive type. Making allowance for the number of these more expensive sets brings the average market price up to $3.22 per set on the basis of the price prevailing in the open market dur ing 1913. The prices prevailing since 1913 and the present prices are substantially higher than these prices. But, assuming for the purposes of this case, that the Southwestern Company might be able to buy these sets in quantities at a price of $3.19 each the cost of 94,489 sets would be a total of $301,420.

The following items represent fair figures for computing the annual charges.

792 Repairs.

The total number of instruments returned by the Southwestern Company for the year 1913, as shown by the records, was 44,295. On account of the fact that part of these instruments were handled and repaired at a point where other instruments were also repaired and because after the instruments had been received they were not kept separate from other instruments returned, it is impossible from the books to arrive directly at the repair costs of instruments returned by the Southwestern Company. The following estimate of such repairs is, however, trustworthy. For the country as a whole 60 per cent of the instruments returned in 1913 were repaired. On this basis the number of instrument repairs made for the South western Company in 1913 was 26,577. The average cost of the instrument repairs including transportation and handling charges, and also small parts furnished, was 40.7 cents, making the cost on 26,577 repaired instruments for the Southwestern Company $10,810. These figures for repairs do not cover or include any instruments returned requiring complete reconstruction or instruments which are junked when returned, such cases being provided for by de preciation.

Depreciation.

Depreciation is taken at 10 per cent. This figure is based upon our actual experience with these instruments. This item takes care of instruments which are junked when returned and those which come back in such condition that they must be completely recon-
793 structed, utilizing, when available, some of the old parts. In figuring this item no instruments are included which are taken care of under the repair item mentioned above, and

due allowance is made for the junk value of instruments which are not repaired and for such parts as can be used again.

Administration.

To allow for the administration expenses and general overhead charges in connection with the handling of instruments an item of 1 per cent is included.

Return on Investment and Reserves.

To allow for return on the investment an item of 8 per cent is inserted and 2 per cent for reserves for contingencies.

The percentages given above amount to the following:

Depreciation	10 per cent.
Administration	1 per cent.
Return on investment	8 per cent.
Reserve for contingencies	2 per cent.
Total	21 per cent.

Taking this percentage, 21 per cent of the first cost of instruments, $301,420, as given above, gives a

Total of	$63,296
Adding to this repairs	10,810
Gives an appraised value of instrument services for the Southwestern Company for 1913	$74,106

794 The average number of subscribers' stations in service in the Southwestern Company in 1913 was 82,802. The average annual cost per station was therefor 89.6 cents.

The above estimate is made on the basis of $3.19 for the cost of the set. Since 1913 the price has been increased to $3.60 in 1916 and to $4.62½ in the early part of 1917. The present competitive sales price of a set is $4.35, made up as follows:

Receiver	$1.45
Transmitter	2.00
Induction Coil	.90
	$4.35

On the basis of the present price the annual cost would be increased from 89.6 cents to $1.17.

Evaluated Savings—Summary.

In return for all the services referred to above, the American Company receives from the Southwestern Company 4½ per cent of certain of the gross revenues of the Southwestern Company. For the

year 1913 the records show that this amounted to $129,507. Th
is equivalent to a payment of $1.56 per subscriber's station. F
St. Louis the corresponding total amount was $94,753, and t
amount per station, $1.57. The value of the instrument servic
rendered by the American Company in furnishing, repairing an
maintaining the transmitters, receivers and associated inductio
coils required by the Southwestern to carry on its business has be
conservatively appraised at 89 cents per station. Deducting th
value of this service from the total 4½ per cent payme
795 leaves the sum of 67 cents per station for the Southweste
Company as a whole and 68 cents per station for the City
St. Louis as the amount paid for all other services.

Some of these other services have been described herein, althoug
very briefly considering the magnitude of the transactions involve
Each has resulted in great pecuniary savings or other advantage t
the Southwestern Company. A few of the annual savings o
charges against operating revenue for 1913 which have bee
definitely appraised herein are tabulated as follows:

	Southwestern Company.	City of St. Louis.
Improvement in cable (St. Louis only)	$140,000	$140,000
Duct savings because of cable improvements (St. Louis only)	20,000	20,000
New alloy for cable sheaths	1,100	1,000
Phantom Circuits	25,000	.....
Loading (St. Louis only)	26,000	26,000
Improvement in switchboard cords (St. Louis only)	29,000	29,000
Improved Toll Operating Methods and Equipment	27,000	14,000
Improved Local Operating Methods and Equipment (St. Louis only)	140,000	140,000
Total Evaluated Savings, 1913	$408,100	$370,000
Average number of stations, 1913	82,802	60,304
Total evaluated savings per station	$4.92	$6.13
Payment per station for services other than instrument service	.67	.68

796 It should be noted that the foregoing table gives the value of only those few items which have been definitely appraised and that no figures whatever are given for many of the very important services which have been described, and that no appraisal has been attempted of the long list of more than 700 different engineering subjects which have been completed during the past seven years for the Southwestern Company and the other Associated Companies and which are given in Appendix E.

Nothing has been set down in the table to show the value to the Southwestern Company of the 400 Engineering subjects which the

General Staff has now in hand for the benefit of the Southwestern and the other Associated Companies.

Nothing has been put down to indicate in figures the value of the services of the Legal Department, the services of the Patent Department and the value of the patent protection, or the services of the Comptroller's Department or the services of the Insurance Department.

Nothing has been put down for the services of the Financial and Administrative Departments and the President and Vice-Presidents of the American Company.

There is no doubt that even the most moderate estimate of the value of all these services to the Southwestern Company would greatly increase the figure of over $400,000 given above.

The definite figures given above have been prepared in the cases cited not with the expectation that they would furnish the sole or principal measure of the value of the services rendered, but
797 rather that they would serve as far as possible as a guide to the Commission in its comprehensive consideration of the value of the services as a whole. While the figure of $5.00 per station is a moderate one and represents only a small part of the total services rendered to the Southwestern Company, yet it could be divided by 8 and still be larger than the payment which is made for services other than that of supplying, repairing and maintaining instruments.

It is not by these figures alone that the total value of the services may be determined, but taking them in connection with the description of the services rendered, and having in mind all of the circumstances of the case which have been related herein, it is possible to judge of the magnitude and capabilities and value of this organization which is, at all times, working for the Southwestern Company and for St. Louis, and one can also get some idea of the vast resources which are concentrated upon the telephone problems of that company.

With the continued growth of St. Louis and the other parts of the territory of the Southwestern Company, the telephone system of the Southwestern Company will increase not only in size but also in complexity. New problems of many kinds must inevitably arise in giving service to the public. A large number of new projects are receiving careful consideration at the present time. New scientific discoveries must be applied to the plant and apparatus in a manner so calculated as to produce the best service. It is, therefore, clear that the services which the General Staff performs for the South-
798 western Company will increase from year to year in the future as has been the case in the past.

The foregoing is, I believe, sufficient to warrant the statement that for the City of St. Louis, and for the Southwestern Company as a whole, it is stating the results of the above analysis of the services rendered and the appraisal thereof with fairness and moderation, to say that for the payment made, the Southwestern Company and the City of St. Louis receive in return each year from the

American Company more than full value in the form of services rendered.

List of Appendices.

The several appendices referred to in the statement have been introduced as exhibits in this case. The following table shows the exhibit numbers:

Appendix.	Rhodes' Exhibit Number.
A.	1. Chart shows services under License contract.
B.	2. Diagram of General Engineering Staff American Telephone and Telegraph Company.
C.	3. Diagram of Engineering Staff of Western Electric Company.
D.	—. Typical Specifications and handbooks.
E.	20. Partial list of work completed.
F.	19. Partial list of work on hand.
G.	21. Partial list of Engineering Bulletins and Specifications.
H.	23. List of unexpired Patents.

799 The associated companies are not charged any royalties for the use of patents and they never have to give any attention to patent questions because that is all done for them by the general staff. One of the important duties of the general staff is to be always on the look-out for worthy ideas from any source whatsoever. All patents issued, all statements in papers, all devices that are submitted to us by inventors are all considered, and they come in in all forms from the completed specification to a pencil sketch on brown paper, but the thing that we look to is the idea to see out of all these imaginable kinds of suggestions if there is a dream of anything that could be developed, perfected and made useful. All issued patents that in any way bear on the telephone business are submitted to our engineering department by the patent department, and we give them consideration in investigation and report whether there is anything which in our opinion the associated companies might want to use. If so, we seek to acquire the necessary patent rights to use this. The utmost care is devoted to this and I don't know of any instance where we have let a worthy idea escape. We cover anything that is of possible interest that arises anywhere in the world. Almost without exception, whether the ideas are patented or not, they are far from being in form suitable for use by the associated companies, and in any of these instances a large amount of study and investigation is required by our Staff in order to determine the possibilities of the device. The number of patents that are now in existence, live patents, that are held for the benefit of the associated companies is upwards of 2,600.

A list of these 2,600 live patents held by the American
800 Telephone & Telegraph Company for the benefit of the Southwestern Bell Telephone Company, and other Bell companies, was introduced in evidence, but is omitted here since it will serve no useful purpose.

Now, the subject matter of a great many of these patents is of great importance in the business. The groups of them taken together cover matters of vital consequence in the economy and efficiency in the apparatus used by the associated companies. Several groups of them together cover broadly and in detail the apparatus, methods and systems which are required for improvements in the transmission of speech. Another large group covers ground that we expect to traverse in the prospective development of switchboards.

These patents also cover the systems which the associated companies are now using, some of them cover methods to be used in the future. They insure the associated companies in the unmolested use of the system which they now have. Any one out of hundreds of these patents in hostile hands might be the basis of a successful suit against the Southwestern Company. The result would be that most expensive reconstruction work would be required to avoid infringement or else a large tribute would have to be paid to the patent owner. If they were all of one exclusive patent of an associated company—if part were owned by one associated company and part by another, no one company could have the best system. We feel that it is necessary for them to be held for all alike.

The Patent Department of the Headquarters organization is prepared at all times to advise the associated companies regarding patent matters, thus the associated companies avoid costly patent liti-
801 gation. The Patent Department also sees that the necessary steps are taken to secure adequate patent protection on all new development so that the associated companies may enjoy their free and unmolested use.

To summarize the whole patent situation, we acquire a great many of these patents, not with the idea of preventing other people from using the devices, and frequently not with the idea of using that particular device ourselves, but always with the idea of having such patent rights as to give us an absolutely free field for the development of the art along the best lines. We don't want to be in a position where the Bell System in the future will have to accept something as a substitute that is not the very best thing, because there are some patent rights outstanding which would be infringed. Now, no company by itself could do this, no one company could get all these patents if they tried to do it; somebody else might hear of it first and would get it and the other companies wouldn't. But the principal point about it all is that in our development work in the future we don't want to be restricted. We want to be able to give the associated companies the best there is.

Q. Desbribe generally the instrument service performed by the American Company for the Southwestern Company?

A. The instrument service consists in furnishing the Southwestern Company all of the transmitters, receivers, and associated induction

coils that the Southwestern Company requires for giving telephone service, and also repairing and maintaining these instruments. Whenever any general improvement is made and a new type of instrument is brought out the Southwestern Company under the
802 present arrangement is free to return the instruments of the older type and without additional charge to obtain instruments of the latest type.

In order that the Commission may have a picture of what this instrument development means I can briefly review some of the important changes and improvements that have taken place in the past.

Now, at the beginning of the business in 1878 the type of transmitter that was in general use was the so-called Blake transmitter.

Now, in 1891, just the year before I came into the business, the so-called solid back transmitter was beginning to be furnished. That is this instrument, known as the No. 239 transmitter. It is of the wall set type mounted against the back board in this way and the induction coil is contained in this swelling in the base.

I have pictures of them all. This is the No. 242 transmitter, which began to be issued about 1900. The induction coil used with this transmitter was separate from it. This is the type of induction coil used with the common-battery transmitters. Then this No. 242 type of transmitter was replaced about 1904 by the No. 250 type, in which the cord which you see on the outside of that 242 transmitter is in this one concealed within the arm. Then about 1900 the desk stand began to come into fashion and this type of transmitter which is fitted with a mounting to go on the desk stands and is known as the 229 type of transmitter, was furnished to the associated companies.

In the year 1913 still another form of transmitter known as the 329, of higher efficiency than any other yet developed up to
803 that time, was produced and furnished to the associated companies, and right now a still further improved form is being issued and we will have to expect these other types of transmitters to be returned and superseded by the new type.

Now, in the receivers a similar change has been made. When I came into the business the so-called hand telephone, known as the No. 101 receiver, was the instrument which was then used by all of the associated companies. In about 1900 to 1902 what we call the early form of the 122 receiver began to sweep this early form (101) out of use. This early form of 122 receiver was replaced in 1904 by a later form which had the shell made in two pieces, which reduced the maintenance of the instruments considerably.

The next important change after that was made in 1912, when the 144 receiver was produced and this is the one which for the last four or five years has been going out to the associated companies in large quantities.

Pictures of the various types of transmitters, receivers, etc., mentioned in evidence, and samples of cable, wires, loading coils, etc., mentioned in evidence, were introduced in evidence as Rhodes Ex-

hibits 24 to 41 inclusive, but are omitted here since they will serve no useful purpose.

Q. The value of the instrument service. Will you proceed with that?

A. I have investigated this matter of instrument service and have made an estimate of what in my opinion it would cost the Southwestern Company to purchase its instruments and repair and maintain them if it did not obtain them under the present system from the American Company.

804 Now, answering your question as to how I arrive at the cost, I obtained the current market prices for instruments corresponding to the No. 122 and No. 144 receivers, which I showed yesterday, the 229 and 329 transmitters, and the No. 20 induction coils. Those were the instruments which were in use in the year 1913. The price of the transmitter in the open market at that time was $1.50. The price of the receiver was $1.14, and the price of the induction coil fifty-five cents, a total of $3.19. Now, I have used in this exhibit this price of $3.19 for the succeeding three years. There are certain circumstances I might mention there. In the first place, I have made no allowance for the fact that the Southwestern Company obtains certain instruments for the use of operators at switchboards which are of a more expensive type than covered by this figure of $3.19. Also since that date, due to increased prices of materials and labor, the cost of instruments has increased. In April, 1916, the price of a complete set corresponding to $3.19 had become $3.60. Later in 1916 it became $3.70. And the present price is $4.35.

The minimum investment, based on the cost of $3.19 in 1913, to the Southwestern Bell Telephone Company for these instruments, if they owned them, would have been $301,420.00. In 1913 the Southwestern Company returned for repairs 44,295 instruments. Sixty per cent of these instruments were repaired. The average cost of repairs was 40.7 cents per instrument. The cost of repairs figures out to $10,810.00. Depreciation is figured at 10 per cent, which is a conservative fair figure. Administration is figured at 1 per cent; return is figured at 8 per cent. "I have used that figure with the thought that for a public utility business like the telephone
805 business with the risks involved that a return of 8 per cent seems to be about the minimum rate at which money can be attracted into such a public utility enterprise. It is a figure that has been allowed by Commissions for this purpose." Therefore, the annual charges on this initial investment and interest that the Southwestern Bell Telephone Company would have had to meet in 1913 of $301,420.00 would be $74,106.00, and for the year 1916 these annual charges would amount to $80,589.00. This annual charge figures out per set for the Southwestern Bell Telephone Company: For 1913, per set, 83.1 cents; 1914, per set, 83.6 cents; 1915, 81 cents; 1916, 81.9 cents; and 87 cents for 1916. "If I had taken present prices of instruments, these figures would have ranged from $1.13 to $1.18 per station, but I have kept the figure which was the price during the year 1913." There are more sets than stations, due to the

instruments which are used at switchboards and by employes in various operations and the instruments that are kept on hand to take care of urgent calls. The annual cost per station, as figured above, is figured on a station basis and not on a set basis.

The total 4½ per cent payment under the license contract made by the Southwestern Company for the year 1913 amounted to $129,507.00, which is equivalent to $1.45 per set and $1.56 per station. This is for the entire Southwestern Company. For the year 1913 the total payment under the license contract for St. Louis alone amounted to $1.57 per station, of which at least 89 cents is attributable to instruments per station on the basis of 1913. In these figures there has been no allowance made for patents or engineering work in developing the instruments. On the basis of the 1913
806 figures for the company as a whole, the Southwestern Company paid 56 cents per station for the services rendered other than the instrument services, and for St. Louis alone it paid 68 cents for the other services.

Q. In other words, the Southwestern Company is getting for a payment of less than ten cents per month per station, or approximately five cents, the benefit of all the services you have mentioned here in addition—that is, excluding instrument service?

A. Yes.

Q. Do you think these services are worth more than the amount that is actually being paid? In your judgment, as an engineer?

A. Yes; some of the services which I have evaluated show that the value of these services to the St. Louis Company is many times this payment.

Q. Do you know any place where the St. Louis Company could get these same services for as little money as they are now paying for them?

A. I don't know any place where they could get them for as little money. In fact, I don't know any place where they could get them at all, services of the same character they are getting now.

Q. That is, there is no other place to get them? If they had anything that was a substitute even they would probably have to pay more money than they are paying now?

A. That is my judgment.

Q. Mr. Rhodes, you said a little while ago that the cost to the subscriber, the cost of this service, amounted to about 5 cents per station per month?

A. Yes, sir.

Q. And you were asked whether it was worth that to the company. I believe you said it was. Now, what is your judgment as to its being worth that to the subscriber. Does the subscriber get
807 that much benefit out of this service?

A. I am sure that he does, because, in my opinion, if these improvements and savings had not been made the subscriber would not obtain anything like the grade of service which he obtains now, and he would not have been able to obtain service at the rates at which he is getting it now.

Q. In the course of your testimony you testified to different sums which were the savings to the Southwestern Bell through the services rendered? A. Yes, sir.

Q. Now you have those sums totaled up?

A. Yes, sir.

Q. What is the total amount?

A. I would like to say this, that included in this sum are some figures which I have not described, but what Mr. Estabrook has worked out and will testify to later. The sum of all these items both from the plant and from the traffic amount to the sum of over $400,000 a year saved by the Southwestern Company.

Q. Now, I want to understand just what you mean by "saved." Do you mean that if that invention or improved method had not been adopted by the Southwestern Company through the advice or the suggestion from the A. T. & T. that to have got this plant in the condition it is in now it would have had to have paid out that much more money?

A. Each year, using what was available before this improvement was made. For instance, in the case of this fine wire cable improvement, I take the exact length as shown by the inventory of each size of this fine wire cable, 50 pair, 100 pair, 200 pair, and so on, in St. Louis and found out what the cost of that was at the prices used in the appraisal; then I said, if this cable 22 gauge had not been available and they had provided the same number of pairs exactly,
808 the same number of wires, of 19 gauge, that was the best cable which was available before that time, that at the prevailing prices of 19— the difference in cost would have amounted to so much money, something over a million dollars.

Q. So much per year.

A. And the annual cost of that amounted to about $140,000 a year; that is, the interest, depreciation, taxes and maintenance.

Q. The total benefit or saving then would have been something like a million then you say?

A. That is, the saving in capital investment would have been something like a million. I have the detail figures on all of that if you would like to go into them.

Q. No, I do not, Mr. Rhodes. You stated at the beginning of your testimony that the value of the Southwestern Bell was something like $11,000,000, as I remember, without adding in the additions and betterments.

A. That was the book value of that year. I simply took that figure off their book account in order to give some measure of what the value of these services were by indicating the basis that it was applied to.

JAMES T. MORAN, being duly sworn, testified on behalf of the Company as follows, to-wit:

Mr. Moran is president of the Southern New England Telephone Company. He has been connected with this company for 33 years. The Southern New England Company has the 4½ per cent license contract with the American Telephone and Telegraph Company, ex-

cept that the American Telephone & Telegraph Company
809 does not do its financing. They pay 4½ per cent of certain gross revenues the same as the Southwestern Bell Telephone Company for the services enumerated by Mr. Rhodes and other witnesses, with the exception of the financing element which the Southwestern Company receives in addition to what the Southern New England Telephone Company receives.

The Southern New England Telephone Company owned the first exchange in New Haven, Connecticut, which was ever open for business to the public in the entire world. Their first exchange was opened in 1878, and they published a directory under date of February 21st, 1878. This company covers the state of Connecticut and has a capital stock of practically $12,000,000.00 at the present time, with 145,500 stations.

The American Telephone & Telegraph Company owns 33.21 per cent of the stock of the Southern New England Telephone Company. The balance of the stock is owned by the public, by about 2,000 different stockholders.

Q. How many directors have they in your board of directors?

A. Two, one active and one non-active. Two out of twelve.

Q. Out of twelve?

A. Yes, sir; ten Connecticut men.

Q. Has the American Telephone & Telegraph Company at any time ever controlled your company?

A. Never.

Q. You say the American has about 33 per cent of your stock?

A. Yes, sir. And never at a meeting in my recollection has the 33 per cent been anywhere near a controlling factor in the
810 meeting. My recollection, I go away back to the original stock arrangement with the American Bell in 1884, as far back as I remember directly, with the figures that I have looked at, and for the last twelve meetings we have had we never voted less than 76 per cent of the total stock. We voted one meeting 78 per cent. We have always had 15 to 35 per cent in excess of their voting power.

Q. And you say only one of the two directors that the A. T. & T. Co. has been selecting has ever attended your meetings.

A. Yes, sir. Mr. Vail is a director but never has shown up.

Q. Your company is entirely in the control of your majority of directors?

A. Oh, yes.

Mr. Moran's company for 1916 paid aproximately $197,000.00 to the American Telephone & Telegraph Company under the 4½ per cent license agreement, at which time they had approximately 129,000 stations. "That was the average number for the year. That is the way it is arrived at."

Asked to tell in his own way what the services are that his company receives and whether in his opinion it is good management or not to continue this contract, he stated that he could best describe the services and his opinion in regard to the same by submitting

an answer which he prepared for the Interstate Commerce Commission when they first made inquiry into the telephone relationships throughout the country. Thereupon a paper marked "Moran Exhibit 1" was introduced in evidence, and is as follows:

811 MORAN EXHIBIT 1.

The 1½% payment to the American Telephone and Telegraph Company covers (1) the furnishing to The Southern New England Telephone Company of all telephone transmitters and receivers it uses in its system, with a 3% overstock; the repair and replacement of defective instruments and the substitution of instruments of improved types as they are developed; (2) rights, privileges, and general serives, as follows: Advice and direct assistance in (*a*) building engineering, including the design and character of central office buildings, (*b*) equipment engineering, including standardization of central office and station equipment, (*c*) plant engineering, including standardization of construction methods and establishment of protective measures against the interference of foreign currents, (*d*) traffic engineering, including studies of cenral office requirements and standardization of operating practice, (*e*) commercial engineering, including field development studies for a long period of years, (*f*) fundamental engineering, including the determination of fundamental plant requirements from the data established by development studies; utilization of patents purchased and developed by the American Telephone and Telegraph Company; legal advice and assistance in regard to taxation, National and State; advice and assistance in matters pertaining to governmental regulation, National and State; publicity as advanced by newspaper statements, and pamphlets setting forth the policies and purposes of the Bell Telephone system; advertising, as contained in all the leading magazines of the country; financing, including direct loans and the underwriting
812 of the liability assumed under the Plan for Employees' Pensions, Disability Benefits and Death Benefits; accounting, including the checking of the Company's statements and an annual audit of its books; and a general security and advantage resulting from the immediate availability of and daily correspondence with a comprehensive organization composed of the most expert telephone men in the world.

"Modifying that answer our company availed itself of all that service except in one case it does not—it does not avail itself of the financial side of the relationship."

Speaking of the 4½ per cent license contract, Mr. Moran said:

"I regard it as a bulwark of strength, and regard it as backing we have—it means a lot. It means that you can operate and if the bank turns you down you can go to a security that means something."

The stock of the Southern New England Telephone Company has paid 7 per cent for four or five years.

The Southern New England Telephone Company is free at any time to cancel the 4½ per cent arrangement with the American Telephone & Telegraph Company. When asked whether or not he would consider it advisable to cancel this arrangement he stated: "I would not think of doing it, and I would think I ought to be fired off the job if I did."

Q. You think it is a very valuable arrangement?

A. Very. We constitute as associate company an operating unit in Connecticut of the Bell System.

Q. Why don't you cancel this arrangement? Why don't you buy you some instruments and save this money per year?

A. Because I believe very strongly in the value to the Com-
813 pany and to the public in Connecticut in having this arrangement, which I regard as worth what we pay for it, and I would not want to consider giving it up or sacrificing it to any degree.

Mr. Moran figures that on the basis of $3.20 per set the instrument service alone is worth 81 cents per station per year to his company.

I believe the services are necessarily involved in the instrument. That is, the instrument was the keynote of the business. It was that which started the enterprise. The service was merely the amplification of the use of the instruments. In order that the instrument may reach its full efficiency it would naturally mean some efforts. Whether we get that in concentrated organization from the American Telephone and Telegraph Company or go ahead and organize an independent bureau is far from the question, in my mind. Beyond that I don't think the Bell System should have to step in and spend money in development studies simply so that an independent might reap the benefit of it. I think it should contribute to the value of the service. There is no doubt about it that they do at some time get the benefit of the service. It is impossible that they should not. As a matter of fact, in my judgment, as a pioneer in the actual performance of the business, the state of the art of the commercial telephone in existence today is the result of this very development and the organization, whereby it was not left to the fellow without money to develop it, but men that had capital and were interested in the development started in elaborately to
814 help it along. As a matter of fact, in my early day I remember we would get into trouble. The transmission was—we used to say "rotten"—we didn't have much to spend on it, and we would send to Boston headquarters and they would send down some wise man, expert—men who had been largely telegraphers in the early days—Mr. Vail and a lot of them, and they would come down and paw over our apparatus, and many of the experiments that related to the improvements in the service were made on our old exchanges. Some of them, I think, are in what they call the "morgue," or curiosity shop of the Western Electric. The original Borden are in the Smithsonian Institution, I think.

Q. You were speaking about transmission difficulties. Did you have any specific difficulty on account of high power wires?

A. Yes. I heard Mr. Rhodes tell that very interestingly. That was a condition that looked at one stage as if it would annihilate us. It was in the heyday of the Mellon Administration that I, meek as I am, came up against Mellon and his railroad coterie, and it was an impossible proposition, apparently. I put the job up to the A. T. & T. and went home and went to sleep.

Q. Did they solve the difficulties for you?

A. Yes. For a while it was a substantial menace.

Q. That service in solving that difficulty alone was worth a great deal to you, wasn't it?

A. Yes. It saved our service going to pieces. They have twenty-two thousand volts on their wire, divided into two side wires, eleven thousand apiece, Westinghouse installation.

Q. Do you feel like, as President of your company, that the telephone art is completed and you can rest on what has
815 already been done and take chances on not having the advantage of the future services to be rendered under this agreement?

A. No. I would buck hard against signing up to accept for my four and a half per cent only the services we are getting now. I want the things the General Staff is daily working upon. They have done a great work, and I expect them to do more, and I expect to have the benefit of it. That is the difficulty, I might say, in my judgment, that is the difficulty of putting the situation in writing. You are talking about something that today is so and tomorrow is going to be entirely different.

Commissioner Blair:

Q. The benefits you receive are constantly in a state of evolution?

A. Yes, I believe there are a lot of things that they are not in a position to talk about. We are always hopeful that something more will make it possible to operate the business with economy and avoid as a general proposition going to the public to demand a substantial increase in rates. In other words, the ability to carry on the business in my state on practically the old rates has been due to the constant economies which the engineering department of the A. T. & T. has developed, which put into use enables us to do a great business at substantially the same or lesser expense. That is good business.

B. F. McBURNEY, being duly sworn, testified on behalf of the Company as follows, to wit:

Mr. McBurney is assistant general manager of the Cincinnati & Suburban Bell Telephone Company. The American Telephone &
816 Telegraph Company owns 30 per cent of the stock of this company. This company has the 4½ per cent license agreement with the American Telephone & Telegraph Company with the exception that, as in the case of the Southern New England Telephone Company, the American Telephone & Telegraph Company does not do the financing for the Cincinnati & Suburban Telephone Company.

The amount paid by this company to the American Telephone & Telegraph Company under this agreement in the year 1916 was "about $140,000.00, which, reduced to a per station basis, would make it about $1.69 to $1.70 per station." The reason it is higher than in the case of the Southwestern Bell Telephone Company is due to the fact that the gross revenues of the Cincinnati Company per station are higher than the gross revenues of the Southwestern Bell Telephone Company.

Q. You are free at any time you want to to break this contract if you are not satisfied with it?

A. Yes, but conditions have never arisen in the past which would make us want to do that in any degree.

Q. Are you satisfied with your arrangements with the American Telephone and Telegraph Company?

A. More than satisfied; yes.

Q. How many members on your Board of Directors?

A. Seven in all.

Q. How many of those are elected by the American Telephone and Telegraph Company?

A. The American Telephone and Telegraph Company has only one representative, and that is Mr. Vail. He never has attended a meeting.

Q. You run your company to suit yourselves?

A. Absolutely.

817 Q. Is it your judgment, from what you know of the services rendered to your company, that the arrangement is a good one and the services worth more than the amount you are paying?

A. Yes, that is my judgment. As a matter of fact, I don't see, if we could not get these services from the A. T. & T. Company—from one standpoint that would be valuable, because I know of no other place they could be obtained at any price. In a small organization like ours we haven't the finances to develop such a staff.

ROBERT F. ESTABROOK, being duly sworn, testified on behalf of the company as follows, to wit:

Mr. Estabrook is the telephone traffic engineer in the engineering department of the American Telephone & Telegraph Company.

Q. What engineering experience have you had, briefly?

A. I entered the telephone business in 1902, as soon as I graduated from school, entered the engineering department of the American Company. I was sent to Pittsburg to assist one of the engineers on some work they were doing for the associated company at Pittsburg, and shortly after arriving there was transferred to the local company's employ. I remained there about four years, and then went to Minneapolis where I was offered a position by the Superintendent of Traffic of the Northwestern Company that operates in the Dakotas and Minnesota. Then in 1909 was offered a position with the Engineering Department of the American Company again at New York, where I have been since that time.

Q. What do you mean by the term traffic, or traffic
818 engineer?

A. Mr. Rhodes has been talking about the telephone plant and the plant engineering, largely. There is another main division of the telephone business, and that is the traffic end of the work. The telephone traffic relates to calls handled, just as on a railroad passenger traffic relates to passengers and freight traffic is freight.

Commissioner Blair:

Q. The actual use made by the public?

A. Yes; so that our work in the traffic engineering department has to do not entirely with physical needs, like plant, instruments and poles, but has to do very largely with the operation of the switchboard and the management of the plant in use, the physical property, in giving service.

Mr. Frank:

Q. Does the work of the American Company's engineers cover traffic problems of the different kinds?

A. Yes; covers very broadly the scope of traffic engineering work. That involves first the designing of the telephone switchboards, because every switchboard has to be designed to handle some particular class of traffic. There are the local boards, where the local exchange service is handled. There are boards where the incoming calls from other exchanges are handled. There are the switchboards where calls are first recorded and the boards where the toll calls are completed. There are several kinds of boards, for information service, and for making service connections. The traffic engineers have a great deal to do with the designing of these different kinds of boards. They also study to develop the methods for operation of those boards, the different boards which handle different kinds of traffic requiring different operating methods. These operat-
819 ing methods are very important because they determine the amount of board required and the cost of giving service. For instance, I might mention the cost of operators' wages of the Bell System which is about $40,000,000 a year. So it is an important matter to have those operating methods carefully studied and developed. The traffic engineers also make studies to determine the proper amount of traffic to be handled on different classes of equipment and the different types of calls. And they also develop methods by which the amount of traffic and the manner in which it is handled are recorded, so that the matter may be studied further.

Q. Do these traffic engineers work exclusively at problems that come up for the associated companies?

A. No. The traffic engineers work on the problems that are peculiar to the associated companies, both the matters involved in the local service and the toll service, and also the general problems that are involved in the handling of toll service by our own long distance company.

Q. Does the long distance department of the American Telephon Company have its own engineers?

A. Yes, the Long Lines Department, we call it, has its own engineers, and these report to the General Superintendent of Traffic And they have their plant engineers, that report to the Genera Superintentendent of Plant, who care for all their own specia problems in the maintenance and extension of the Long Lines plant

Q. Do the associated companies have traffic engineers also?

A. Yes; all of the associated companies have traffic engineers who are working on the problems that are peculiar to their own situation. The American Company engineers study the
820 general problems that affect the business as a whole. They develop equipment, and they develop methods that can be employed throughout the country, but the engineers of the associated companies apply those methods and that equipment to the situation in particular places. They do not try to develop improvements, but they use what is available to them, but they are so tied up in their own routine work that ordinarily they would not have the time nor the men nor the same broad information for making such special studies.

Q. They do not, then, as I understand it, do duplicate work?

A. No, there is almost no duplication of work. I should say there is none whatever between the work done by the American Company engineers and that done by the associated companies' engineers except that frequently we are called out to some territory on some particular problem and then we work with the local engineers on their own particular problems.

Q. You may enumerate some of the particular features in which the switchboards and the other central office equipment have been improved in recent years.

A. Mr. Rhodes mentioned some of the improvements in the relays, which are of special importance from a plant point of view, but there have also been improvements of a great many kinds which have affected the operating features. A great deal of the time of the operator is spent in the manipulation of the cords and the keys, and the amount of traffic which can be handled at the switchboard depends upon the time it takes to perform all these operations. For that reason we are constantly studying every means there is for improving the case of the operation of these switchboards.
821 Some of the improvements that have been affected I am going to briefly mention. The large part of the work at this time is spent just in putting up and taking down the cords. Perhaps a third of her time is spent that way. Now the cords we had prior to those in use were stiff. They were stiff because they were built of a stiff material, and because the apparatus that restored them to their positions did not work freely, but improvements were made in the cords and in the apparatus for returning them to their cord seats when they are through. You will see an operator sometimes struggling for two or three seconds to get a cord back in its seat, while the total time they spend on the ordinary connection is only ten seconds on a local connection and about sixteen on trunked calls, and we

were able to improve the operation of the cords so they take fully a second less time to restore them to the cord seat. Now with the amount of traffic that is handled daily in St. Louis this slight improvement on the many thousands of operations involved amounts to a saving of about 230 odd hours in the operators' time per day, and that, at the rate of expense for these operators amounts to nearly $20,000 a year in the operating costs, as that saving of operators' time is worth that to us and the associated companies.

Other improvements were made in the keys. The preceding early types were plunger keys. For those, lever keys that operated more positively and more easily, were developed.

Then the supervisory signals associated with these cords have been made more live and better in their operation. These signals tell an operator whether the called station has answered, whether
822 either party wants to recall the operator, and when they are through talking the connection is to be taken down.

Another great improvement was in the development of what are called machine ringing trunks. These trunks substitute ringing that is performed automatically by a machine in the office for ringing that before that time was performed manually by the operators. The result is that better service is given and less time of the operator is taken, because the machine does the work which she formerly had to do. It also results in less load. These machine ringing trunks have been used very extensively all over the country and we estimate from the information which we have that throughout the country they are saving the associated companies as much as a million dollars a year in the operating wages at the trunk positions. In St. Louis those trunks are now used at five of the offices and the equipment is ordered for the plant to be installed as soon as possible in all the rest of the offices.

Another development in the switchboard which has resulted in greatly reducing the associated companies' investment in switchboard apparatus was the development of the non-multiple switchboard. Under certain conditions when the traffic originating in an office is completed to a very large proportion in some other office it becomes uneconomical to maintain the multiple of a subscriber's jack through the local positions and it is better to trunk all calls in that office, even calls to other subscribers in the same office, than to provide this very expensive trunk multiple through a great many positions. Now that practice was developed and studied by the American Company engineers and they determined the con-
823 ditions under which it was economical either to retain or drop the multiple and advised the associated companies in regard to it. The number of multiple jacks that have been saved all over the country by the adoption of this plan is very great and the cost of the jacks that have been saved amounts to as much as $5,000,000. That plan is now used——

Q. You don't mean for the Southwestern Company?

A. Oh, no; that is for the companies as a whole, not the Southwestern Company. In St. Louis they use that arrangement in three

of their offices where it is already of some economy, and the economy from that cause will be greater in the future than it is now.

Another example of an improvement in the equipment which helps to reduce the operating expenses and also improves the service has been the development of the pre-payment coin box instrument. You have all had experience with the various types of coin box instrument. The former type required that just after the distant party had been reached the operator had to get hold of the party putting in the call and ask him to deposit the charges on that call. Now that resulted in a delay while the calling party was finding the change, which delay was suffered by both the man calling and the man called. The new type of instrument was an improvement in that device that provided so that in the first place any coin at all could be used to get the operator and that coin could be returned to the man if it was not a proper coin or there was no charge. Then the deposit of the charges on the call are put in during some period before the distant party answer, when the operator can attend to it, and no one is delayed by that work. And, finally, if
824 the distant party is not reached, or there is some misunderstanding as to whether the proper coin is deposited the operator by pressing a button can return the whole amount of coins to the party calling. If everything is all right she presses a different button on the switchboard and it is all deposited in the coin box chamber for receiving the coins. Now that type of instrument is used in St. Louis and on the traffic they were handling about a year ago the saving which it effects in the operating charges amounts to about $70,000 a year. In addition to that, of course, this provides a better form of service.

These are typical of various kinds of equipment improvements. There have been a great many others that I won't mention.

Q. How are the associated companies informed of these various improvements in switchboards and switchboard equipment and engineering methods that are developed?

A. Well, they are advised by correspondence. Their engineers visit us in New York, our engineers are constantly visiting the associated companies in the field, and, finally, all matters involving new equipment or the standardization of a new method which we recommend be followed are sent out to the companies by various circular letters.

Q. Are new circuits or types of equipment now being tested by the General Staff of engineers, and, if so, will the Southwestern Company in St. Louis benefit from those?

A. Yes, sir; new equipment is being tried out in a great many cities. At Minneapolis, St. Paul, Newark, Wilmington, Delaware, at New Haven, and in several offices in New York City, all
825 of which, if finally successful and recommended, will be used and of advantage to the associated companies.

Q. Is that the so-called semi-automatic switchboard you are referring to now?

A. Yes, sir; that is one of them. That is being investigated for Newark.

Q. In what other ways than by the development and improvement of the switchboards has the American Company assisted in traffic engineering problems?

A. They do a great deal of work in the matter of advising the best way of operating the switchboards. As I stated before, the bill of the associated companies for the wages of operators amounts to about forty million a year and it is obvious that any method that is inefficient is going to be expensive and it is very desirable to have them study the problem and attempt to improve on the methods which we are employing. Now, this work has been under way since I have been in the business, about 1902, and during that time the situation has changed very greatly. At that time the exchanges were, of course, not nearly as large as they are now. New York at that time had less than a hundred thousand telephones. It has now got seven hundred thousand. Well, about 1909, I think it was, a member of the associated companies came to us and asked us to tackle that problem. In New York at that time we had about three hundred thousand telephones, their fundamental plan showed that they might expect to have as many as two million. Now, it was very obvious that methods which would successfully handle an exchange with three hundred thousand telephones might be utterly inadequate when we got an exchange as large as a million or two million telephones, and it was desirable, if there were changes and methods that had to be made, to find that out as soon as
826 possible and make the changes before the problem got too big.

We undertook that work and men were added to the department in order to be able to do it. The work consisted, of course, first of all finding out what the present methods were and studying them and where the difficulties in the situation were arising. Then a definite program as to what needed to be done was laid out and the work was started. The work extended over a period of about four or five years. During that time our engineers went to almost all of the principal cities and studied the problems that they had there and tried out new methods of handling traffic and went through the whole situation from start to finish, anticipating what would be needed with a very large volume of traffic and at the period when we could foresee there was going to be increasing difficultiy in getting the forces to handle the traffic and to get them properly trained.

The result of that work is the methods we finally decided on were sent out to the associated companies and they have all adopted them. They are used in St. Louis at the present time.

Q. Are there other similar lines of work that the General Staff undertakes in its Traffic Engineering line that affect the operation of the local exchanges by the different associated companies?

A. Yes, sir; there are two other important lines of work. First of all, it is necessary to determine for every type of switchboard and for every class of traffic what the proper amount of traffic is to be handled on those boards. We are confronted by this problem: We

want our loads, as they are called, to be high enough to be efficient.
827 We don't want them so high they are a burden upon the operating force, and we don't want them so low that unnecessary amounts of equipment have to be provided. In the pursuance of that work our engineers have gone to very many of the different cities, wherever the conditions vary, and made studies. These studies take a great deal of time, some of them are accomplished in a week or two, many of them have taken months, because the answer cannot be seen just upon inspection. The records have to be kept and observations have to be made by men who are experienced and specialists in that line of work in order to know what the true answer is.

Another important line of work which we carry on is the development of the records of the traffic work. Now these records are of two classes, the records of the amount of traffic handled and the records that show the manner in which it is handled, the service records. The records of the amount of traffic are absolutely essential for all engineering of buildings and equipment. They are also very valuable because being made under the same regulations in all places, therefore the basis of comparison of results. Now these records, copies of them, are received by us in New York and we regularly analyze them and look them over and send our engineers out to the associated companies if there is any occasion for it, to help them in meeting some situation that seems to require explanation.

Q. Is any of this a duplication of the work that is being done by the associated companies?

A. No; it is no duplication of the work. Of course they could all develop records of their own, which would be different, but that
828 would be a disadvantage rather than an advantage. It is of great advantage to have similar records taken in all the places because you have a basis of comparison of results, and the methods of conducting these records are very carefully worked out so as to occasion the least effort on the part of the employes who have to make the records, so they are most useful to the various departments such as the engineers and the traffic officials when they want to refer to them and use them.

Q. Have the engineers of the General Staff undertaken to help the associated companies in the matters concerning the handling and managing of the local operating forces?

A. Yes, sir; the problem of efficiently giving service in a city is largely affected by the distribution of the traffic in that office. Every city and every office in every city has its own particular traffic load.

Now the problem that confronts the telephone management is to provide a force of operators that will meet these variations in the traffic so that we don't have more operators than we need at certain times of the day and don't have less than we need at others, and, furthermore, the arrangement of hours must be such that every employe works a full day and gets her time off for meals and for other purposes at proper times for her convenience.

The building up of a schedule of operators' hours to meet the traffic curve is a very fussy and technical part of the work. For

a great many years the problem was overlooked. About 1907, however, our department sent one of its engineers pretty nearly all around the country studying this very problem and he found that in a great many places the forces were not being efficiently
829 managed and, furthermore, there were no well-established methods for building these schedules, and a great deal of information was needed in the shape of tables and dairies so that the traffic engineers would know how to allow for operators of varying experience and for taking care of the service on the switchboards at times when certain positions have to be vacated and a great many other details of that sort.

Well, the result of his investigation at that time showed that throughout the principal cities of the country he could see pretty nearly a million dollars in wages that was being expended unnecessarily and then worked out a complete scheme for making the arrangements in the employes' hours so as to do it efficiently. The result of that was very profitable to the companies.

Q. Now these improvements in switchboard equipment and operation methods have tended then, as I understand you to say, to increase the efficiency of the local operating companies. Is that true?

A. Yes, sir; that is true.

Q. Is it possible to make any estimate as to how much saving is made by these various improvements.

A. Yes, sir. We have gone over the records, I have gone over the records of eighteen of the largest cities and obtained the results attained over an interval of ten years.

Q. Was St. Louis one of those cities?

A. St. Louis was one of those cities. The result showed that at the present time the operating expenses are well over $4,000,000.00 a year at least less than they were at that other period for handling the stuff under the same conditions.

830 Q. What was that $4,000,000?

A. That was for the country as a whole. Now St. Louis was one of the cities which the American Company engineer visited at the time that he made his trip for that purpose, and I have compared the record of the operating efficiency for the three years 1904, 1905 and 1906 with that which was attained in the two years 1915 and 1916 in St. Louis. I find there has been a very great amount of saving in the case of St. Louis; for the wages of the operators and for charges on the amount of switchboard positions that is also saved amounted to about $140,000 a year.

Q. Well is this work that you have been describing, does that have reference to toll service or local?

A. No; that is all the local service of the associated companies with no reference to toll service.

Q. Has work similar to that you have described in connection with the improvement of local exchange switchboards and practice also been done by the American Engineers looking towards the improvement of the toll switchboards and practice?

A. Yes, sir; the same kind of work has been done along both of those lines. As regards the improvements in toll switchboards,

those boards have been almost entirely re-designed during the past ten years and there are changes being contemplated now, to make still further improvement. The present boards give a quicker service, they enable more efficient use to be made of the expensive toll circuits that are connected onto them and they save the time of our operators in the handling of that work. Some of the ways in which the improvements have been made have been in the provision of what are called visional busy signals. The visional busy
831 signal is a little target which indicates to the operator by moving into position whenever a line becomes free. Now if a toll line is idle, the time that some operator could be using it we have lost a certain amount of our facilities and can never get it back. It is very desirable to have her know the minute a line becomes available if she has any chance of using it.

Q. Couldn't she plug in and find out?

A. She can, but that requires an operation on her part and takes some time. Now she can vote this visional signal without interfering with other work.

Q. That is, if she had to plug in she would have to plug in from time to time to tell whether the parties are off of the line?

A. Yes, sir; and the line may become available between the time she is testing it.

Q. I have frequently noticed they have asked "Waiting?" or "Using this line?" Evidently in such a case as that they didn't have this visional signal?

A. Probably not.

Q. If they had had that they would not have had to have asked you if you were waiting?

A. Well, yes; that is different.

Q. That is something different?

A. Yes, sir.

Q. Just go ahead with your story.

A. That visional signal we know from our observation saves about 18 seconds per toll call and that is equivalent to 4 per cent increase in our circuit facilities.

Q. How did you arrive at 18 seconds? Is that a guess?

A. No; that is a result of observation to find out what the improvement is worth to us.

Q. How could you tell that it was 18 seconds though?

A. Why, by putting an observer back of the operators and he has to have special equipment. He has to make his test under
832 two conditions: One is when the present visional busy signal is provided and the others is when it is not. Now he finds out what the difference is in the time that the line remains idle when it might otherwise have been used.

Q. That is, he timed the line when he knew that the party had hung up and was through using the long distance line and made a great many experiments and the average of those are 18 seconds lost of time?

A. Yes, sir. That is partly based upon observation and partly based upon our estimate from other sources of information which

we have. Now other improvements were made in the toll cord circuits, such as the provision of cords that could be used either for completing a connection between two toll lines or between a toll line and a common battery exchange line, improved keys, from one position on the toll connection so that the transmission was not cut down and the monitor service was not impaired, and other improvements have been made in the keys, which facilitated the work of the operator and made it unnecessary to substitute the cords and use two pairs of cords as was previously frequently necessary. Then keys were provided instead of trunks for transferring calls upon the switchboards. That was a very considerable—amounted to a very considerable saving on such calls as required the use of that apparatus. Those are some of the principal ways in which the toll switchboards have been improved. Also the toll operating practices were revised and studied much as was done in the case of local operating practice, and very important improvements were made with respect to that.

833 An entirely new toll operating method was finally developed in the course of this work and this resulted in a better service, in less delay in the completing of connections that permits of more efficient use of the toll circuits and which saves in the number of toll operators required to handle a given volume of toll business.

Q. Well have these improvements in the toll switchboards and operating practices that you have been discussing been a benefit to the operating companies in any way that you can directly measure?

A. Yes, sir. We can determine their benefit very accurately. In the case of this improved toll operating method that I have referred to, at the present time about 85 per cent of the traffic of the country is handled on that basis. In St. Louis about 86 per cent of the traffic handled by the Southwestern Company is handled in that method. They have shifted. About three years ago they were handling about 50 per cent of their traffic that way and it has steadily run up to about 85 per cent now. The improvement in this method for the toll traffic handled by the Missouri Company in the eastern half of Missouri amounts to about $27,000 per year in the operating wages and the charges on the position equipment, and for St. Louis itself, on the basis of the Southwestern toll traffic which they handle, amounts to about $14,000 per year.

834 Mr. KOSITZKY, engineer for the Southwestern Company, testified:

Q. Explain to the Commission just what your rights are in regard to those things and what the advantage is of renting them, so to speak, rather than owning them.

A. In the first place, we are interested in giving a comprehensive service. Having these instruments owned by the American Bell or the A. T. & T. Co., we are privileged to return them for replacements whenever we feel it necessary. If we owned those instruments we might be somewhat reluctant in turning them in.

Q. You might be reluctant to discard them?

A. Yes, sir. Those instruments are the principal part of the telephone—of the art of telephony, the receiver, transmitter and induction coil, and it is very important that they be uniform throughout the Bell System not only in Missouri but also in Arkansas and neighboring states.

Q. That is for the benefit of the long distance service?

A. Yes, and that they be of one type and kind.

Q. You have the right, as I understand you, under your arrangement with the A. T. & T. to turn those in and get new ones any time you think necessary?

A. Yes, sir.

Q. And do you have to repair them or do they repair them?

A. We have no charges other than turning them in.

835 Q. You have no money invested in them?

A. No, we have no money invested in them.

Q. You don't have to maintain them?

A. No, sir.

Q. And you don't have to stand the depreciation on them?

A. No, sir.

Q. And in consideration of those things you figure that the use of those—you don't have to carry any in stock with your own money?

A. No, sir.

835 W. O. PENNELL, being first duly sworn, testified on behalf of the Company as follows, to-wit:

Mr. Pennell is the acting cheif engineer of the Southwestern Bell Telephone Company. He heard the testimony of Mr. Rhodes
837 in the St. Louis rate case in regard to the 4½ per cent license contract payment, and he has prepared a statement giving a list of the specific services heretofore rendered by the American Telephone & Telegraph Company to the Missouri & Kansas Telephone Company under this 4½ per cent license contract arrangement, and also some specific services relating to the Springfield exchange. This statement was introduced in evidence as Exhibit 47, and is as follows:

Statement Concerning the Services Rendered the Missouri and Kansas Telephone Company by the American Telephone and Telegraph Company.

The Missouri and Kansas Telephone Company is one of a number of telephone companies in the United States each of which operates within a definite territory and co-operates with the others, so that, by means of all the companies together, and by the lines and system of the American Telephone and Telegraph Company, a comprehensive, standard, and uniform telephone service is, as far as possible, rendered throughout the United States.

The American Telephone and Telegraph Company (hereinafter referred to as the American Company) renders to these companies, often called Associated Companies, certain services for which it receives in return 4½ per cent of certain revenues of these companies.

These services rendered to the Missouri and Kansas Telephone Company (hereinafter referred to as the Missouri and Kansas Company) are:

838 First. Those services rendered directly by the large central administrative staff, sometimes called the "General Staff," maintained by the American Company for the benefit of the Associated Companies. This Staff consists of the general administrative officials of the American Company, including the president, the vice-presidents, and the board of directors; and the following departments of the American Company: The Legal and Patent Department; the Comptroller's or Accounting Department; the Treasurer's Department acting as a part of the financial Department; the Engineering Department; and the Insurance Department.

In addition to these services rendered directly are those which the Missouri and Kansas Company receives as a consequence of the relationship which the American Company has established between all of the different departments of the General Staff, and the corresponding departments in all of the Associated Companies, and the Western Electric Company, which does the manufacturing.

Second. Services consisting of furnishing telephone instruments to the Associated Companies, including the Missouri and Kansas Company and developing and making improvements with respect to those instruments and the transmission of speech thereby.

In order to show clearly and comprehensively at one view, the scope and extent of the more important services, I have prepared a chart which is shown as Appendix A.

Before describing the work done for the Missouri and Kansas Company by the Engineering Department of the American Company I will describe briefly the history, scope and functions of that Department.

839 The Department has existed from the beginning of the telephone business. When it was formed the whole art of telephony was comprised in the crude and, from our present point of view, inefficient telephone of Professor Bell. Starting with the crude telephone of Bell, the American Company, through the various departments of the General Staff and the relations which it established between itself, the Western Electric Company, and the Associated Companies, has developed the art of telephony to the high state of efficiency that it has attained in America. With very few exceptions, all of the great number of improvements between the first speaking telephone ever made and the vast telephone system of today have been the result of this working arrangement established by the American Company.

The Engineering Department of the General Staff of the American Company has been a most important factor in all of these developments, including the transmitter, the metallic circuit, hard-drawn copper wire, the multiple switchboard, and transposed lines. In every branch of the now complex art of telephony, fundamental improvements in construction and service and large economies to

the Associated Companies have directly resulted from this arrangement which was established by the American Company. From it have come most important inventions and improvements in switchboards; subscribers' sets; ringing devices; underground, aerial and submarine cables; underground and overhead construction methods; protection against dangerous currents; and improved operating methods. Valuable technical records pertaining to all branches of the art have been accumulated, and engineering data of
840 every kind are on file and are constantly used in the work for the Associated Companies.

General engineering and scientific discoveries in this country and abroad are carefully studied by the General Engineering Staff and, where containing possibilities of improvements in the telephone service or plant, the new ideas are tested and the results made available to the Missouri and Kansas Company and the other Associated Companies.

The General Staff is in a peculiarly favorable position to obtain from abroad information of all kinds pertaining to the telephone art on account of the cordial relations which it maintains with the telephone and telegraph administrations of foreign governments, and also because of its relations with the Western Electric Company which has technical representatives in most of the principal cities of Europe as well as in Sydney, Johannesburg, Buenos Ayres, Shanghai and Tokio. Reports on matters which may be of interest to the Associated Companies are periodically received through the engineers at these places.

Representatives of the General Engineering Staff are sent abroad from time to time to make special investigations and to attend congresses and meetings of foreign telephone officials. These are some of the means by which the General Staff is enabled to keep in complete touch with all foreign developments that might be of interest or value to the Associated Companies.

The various services rendered by the General Engineering Staff to the Associated Companies may be classified as follows:

841 Class 1. Work upon problems for all of the Associated Companies in the benefits of which the Missouri and Kansas Company participates. This work is largely undertaken at the initiative of the General Engineering Staff and not upon specific request from the Associated Companies. In some cases the work is undertaken at the request of one of the Associated Companies, or as a result of difficulties experienced by one of them, but the problem is worked out for the conditions obtaining in each and all of the companies.

Class 2. Specific work done for the Missouri and Kansas Company. This work is usually undertaken at the request of the engineer, or other officials of the Missouri and Kansas Company, although, on account of its familiarity with the conditions existing in the territory of the Missouri and Kansas Company, from time to time the General Staff initiates specific problems and takes up with those officials matters concerning their company.

As a complete list of the problems which the General Engineering Staff has worked out under the two classifications given above, with only a brief description of each, would fill volumes, I will only undertake to give, under each classification, a few examples illustrating the character of the services rendered, and in some cases, where the nature of the work permits, definite figures indicating the value of such services in the Missouri and Kansas Company.

To appreciate the significance and proportion of the figures which I shall give showing certain savings which have been accomplished, they must be considered in relation to the construction, operating and maintenance expenses to which they pertain.

842 The savings, in the cases where it has been possible to evaluate them, have been determined as of the year 1916. The savings, which I have enumerated, have continued in the succeeding year in increasing amounts and will so continue in the future.

These data for the Missouri and Kansas Company are as follows:

Book value of plant as of Dec. 31, 1915	$21,702,850
New construction added in year 1916	1,877,098
Total expenses in 1916; of which operating and maintenance constitute the larger part	4,022,662

It will be seen that a substantial saving in any of the units which enter largely into these construction, operating and maintenance expenditures will amount to a large sum. Unless we have an appreciation of the total expenditures in these directions we are not in a position to judge of the reasonableness of the savings which have been accomplished in those departments of the business.

From their nature, many of the most valuable services rendered by the American Company to the Missouri and Kansas Company are incapable of definite pecuniary valuation. For example, improved operating methods enabling the Missouri and Kansas Company to give speedier and more accurate service than could previously be given to subscribers, cannot be definitely evaluated, although of the greatest importance.

Similarly, no one can definitely appraise the value of the development of metallic circuits, transposition systems and twisted pair con-

843 struction without which the present extensive telephone development throughout Missouri and the rest of the United States could not have taken place. Even in those cases where I have made a definite pecuniary estimate there is room for the exercise of judgment. The work is of such a character that I believe two engineers, each competent and fair-minded, might perhaps arrive at different results. Definite figures are set down not as the sole or principal means of enabling the Commission to judge of the value of the services, but rather to furnish convenient illustrations of this value, and I am satisfied that they are trustworthy and as accurate as could be prepared, and that they are conservative. Even if radically reduced, they would still be much larger than the amount paid by the Missouri and Kansas Company for the services rendered.

Although the total savings from the work of the General Staff described and illustrated in this statement are real, and accrue from year to year, and are much larger than any figures which are set down in this statement, it is in most cases impossible to trace them directly in the books of the Missouri and Kansas Company or any other telephone company for the reason that so often the result has appeared in the form of improved service without a corresponding increase in investment, expense, or telephone rates.

Even where the savings are direct and tangible, it is often impossible to find them in the books. This is well illustrated in the case of the very substantial and definite savings resulting from the improvement in cable sheaths. An examination of the books would show that in some cases cables actually cost more after this improvement than before. The explanation of this is found in the
844 large increase in the cost of other raw materials entering into the construction of the cables. The effect of these savings in such cases as this is, therefore, to prevent the total costs from rising as high as they otherwise would.

The telephone industry also feels the high cost of living. On behalf of the Missouri and Kansas Company and other associated companies, the energies of the General Staff, not only the Engineering Department, but also the Administrative, Financial and other departments, have been directed to this problem. The result is, up to the present at least, that while the costs of labor, raw materials and commodities in general have been mounting higher and higher, telephone rates have not increased in proportion. This has been accomplished without restricting or impairing the service or cutting wages. On the contrary, these results have been attained at the same time that we have provided in the face of increased wages and greater expenditures of all kinds a greatly enlarged and more efficient plant and a more extended, efficient and amplified service.

To illustrate the functions and scope of the General Engineering Staff a diagram showing its organization, marked "Appendix B," is attached hereto and made a part hereof. The engineers of the General Staff are not only highly experienced specialists in all branches of telephone work, but nearly every man is a graduate of one or more of the important American universities, colleges, or technical schools of recognized engineering and scientific standing. Numerous members of the General Engineering Staff also hold ad-
845 vanced degrees and some have studied at foreign universities.

The Staff from time to time retains, in an advisory capacity, outside experts, skilled in special materials, processes, or practices, wherever their services will be of assistance in the work which is done for the Associated Companies. A diagram of the Western Electric Company Engineering Staff, which works in co-operation with the engineers of the General Staff, marked "Appendix C," is attached hereto and made a part hereof.

Having made this general explanation, I will now describe more specifically a few items of work illustrating the nature of the services rendered by the General Engineering Staff.

Class I.

Work upon problems for all of the Associated Companies in the benefits of which the Missouri and Kansas Company participates.

Among some of the most important and far-reaching services rendered to the Associated Companies as a whole may be mentioned the invention and development of the improved transmitter, the improved receiver, the metallic circuit, the transposition system, the multiple switchboard, and paper insulated, lead covered cable. All of these constitute vital factors in the success of the telephone system of today, but as an adequate description covering our work in these respects would extend this statement unduly, I will pass to the following mention of a few items:

846 Hard Drawn Copper Wire.

The early telephone lines employed iron wire exclusively and it was found that, except for short distances, the transmission of voice currents over iron wire was unsatisfactory. If the telephone system was to meet the growing need of the public, something better than iron wire was required. The Staff studied and tested wires of various metals and alloys and investigated the electrical laws governing the transmission of speech.

Copper, more nearly than any other commercially available metal, furnished the desired electrical properties, but copper wire, made in accordance with the art of manufacture then in vogue, lacked the necessary mechanical strength to be self supporting. Realizing the necessity for the use of copper wire, the engineers of the General Staff invaded the province of the wire manufacturer and there pursued their investigations with such success that they were able to produce what is now known as "hard drawn copper wire," which is so treated as to impart to the wire the necessary mechanical strength. To make use of this wire, new methods for handling and stringing it, for making joints, for attaching it to insulators and for repairing and maintaining it had to be devised.

All of these things were worked out with elaborate care by the General Engineering Staff. Expensive experimental lines were constructed between Boston and New York, and between New York and Philadelphia for the purpose of testing the mechanical and electrical qualities of the new product in actual service and to determine the relative efficiencies of different sizes and varioaions of
847 wire for the purpose intended. All of this work having been completed by the Staff, the new product was placed at the disposal of the Associated Companies and has since become standard for telephone lines of any length in all parts of the world. The pecuniary saving to the Missouri and Kansas Company and the other Associated Companies growing out of this engineering work, is almost incalcuable, particularly because without the use of hard drawn copper wire, the extension of the telephone system would be seriously retarded.

Springfield has benefited and is benefiting today from the development of hard drawn copper wire, as in Springfield there are many miles of hard drawn copper wire employed in exchange service.

Improvements in Cables.

In the early years of the business no satisfactory method was known of placing wires in cables. It was seen that unless cables were developed the growth of the telephone system of the country would be stunted, the importance of the telephone service rendered to the public would be insignificant and the business of the Associated Companies would be but a small fraction of what it is today. The problem of cable development was undertaken by the General Engineering Staff and has been the subject of constant work and experimentation. First, the problem of placing wires in cables within cities was solved. Next, the difficulty of extending cables to suburban regions was overcome. Then cables suitable for interurban use were devised.

A type of cable for city use providing for 2,400 wires in
848 a 3-inch duct, which formerly would only accommodate 200 wires or less, has been developed and made standard. This 2,400-wire cable represents the latest achievement in a continuous train of development which has progressed, step by step, only through continual, careful and exhaustive development work, investigation and invention, as well as study of manufacturing materials and processes accompanied by studies of transmission, economics and many other factors.

Further work is being carried on actively by the General Staff at the present time towards the development of aerial cables of smaller gauge wires than the present standard. Also other development work being done on this subject promises economies from improvements in the insulation of the wires and in the sheath of cables.

One of the important improvements in city cables resulted from a study which disclosed the laws of the electrical transmission of speech whereby we were enabled to reduce largely the amount of copper in certain lines, although increasing it somewhat in others, the net result being that, in the case of about 70 per cent of the cables employed in subscribers' lines of the Associated Companies and for certain short trunk lines between central offices, the first costs were reduced about half.

The Missouri and Kansas Company has already saved (to Jan. 1, 1917), as a result of this work, over $1,780,000, in the first cost of its local cable plant in its territory. The annual savings in charges against operating income for 1916 alone amounted to over $256,000
on account of this new type of cable. Inasmuch as the
849 Missouri and Kansas Company must continue to grow for a great many years to come, and inasmuch as the plans of the Company already made contemplate a very large addition of stations during the coming years, it is certain that the savings from this cable improvement will increase each year.

The above figures take into account only the savings in the cables

themselves. Inasmuch as this cable improvement resulted in increasing the number of conductors which could be enclosed in one cable, it therefore reduced the number of underground ducts required. These savings in ducts in the Missouri and Kansas territory have already amounted to over $250,000 in first cost for the Missouri and Kansas Company and the annual savings in charges against operating income for 1916 alone, amounted to not less than $30,000. Adding this saving of $30,000 on ducts for the year 1916 to the $256,000 saving on cables for the same year, we have a total saving for that year of $286,000 in the Missouri and Kansas Company.

There has been saved at Springfield over $130,000 in first cost of cable and over $18,000 on first cost of conduit. For the year 1916 the annual charge savings were over $20,000 on the cable savings and over $2,400 on the conduit savings, a total of $22,400 for the city of Springfield alone.

New Alloy for Cable Sheaths.

The metallic sheath for cables formerly consisted of an alloy of lead and tin, lead alone not having the proper mechanical and chemical qualities. On account of the high cost of tin, the General Engineering Staff made studies and experiments and many
850 trials extending over a period of four or five years, and covering a wide range of alloys differing from each other not only with respect to the metals employed, but also the proportions of each. This work resulted in a cheaper and equally efficient cable sheath by means of which the first cost of cables for the Associated Companies, taking the output as it runs from year to year, has been reduced by from 4 to 8 per cent. For the Missouri and Kansas Company the savings in first cost to the end of 1916 amount to over $34,000. The annual savings in charges against operating income for 1916 alone amounted to over $3,500. The saving for Springfield alone has been over $7,000, with a consequent saving in annual charges for 1916 of over $1,100. This improvement was only introduced in the year 1912. This saving has increased up to the present time and will increase rapidly in succeeding years.

Phantom Circuits.

For many years the General Staff has done work upon the development of phantom circuits whereby, from two actual or physical circuits, a third or phantom circuit may be obtained. An extraordinary degree of precision in the design and construction of apparatus for this purpose is needed and special precautions in the arrangement of the circuits and in their construction is necessary. Designs of apparatus, specifications, and rules for line construction were prepared by the Staff, and a large number of these circuits established by the Associated Companies. While particularly ap-
851 plicable to toll line and trunk line construction, these circuits have been so arranged as to apply to certain classes of rural subscribers' lines. The savings to the Missouri and Kansas

Company from the use of phantom circuits have amounted to over $1,695,000 in the first cost of plant. The savings in annual charges for this reduced investment was not less than $270,000 for the year 1916.

Duplex Cables.

Inasmuch as phantomed open wire lines, when they reach the outskirts of large cities, have to be carried in cables, it became necessary for the General Staff to develop a phantom or duplex cable suitable for this work. Here again peculiar and very serious difficulties were encountered and the work covered a period of years. The Missouri and Kansas Company has already installed some of this duplex cable with advantages, both in economy of first cost of construction and in enabling phantom open wire lines to be extended on the phantom principle into large cities where open wire construction could not be used.

Application of Loading to Open Wires and Cables.

While the savings in open wire lines and cables mentioned above have been due directly to improvements in the lines and cables themselves, other improvements have been due directly or indirectly to the application of loading (Pupin invention). The factors involved in this new art of "loading," pertain to some of the most advanced and difficult branches of higher mathematics, physics, and electrical science, and can be dealt with only by scientists and engineers of the highest and most advanced type.

852 While the fundamental principles of the invention were described and covered in the patents of Prof. Pupin, which were acquired by the American Company, there remained an immense amount of work to be done to reduce to practice the numerous difficult physical and mathematical conceptions of the loading principle, and to do this so as to attain the improvements in service and the economies aimed at, and also to bring the methods of installation and maintenance within the capabilities of the regular construction and maintenance forces of the Associated Companies. This has been the work of years of a large group of distinguished scientific men connected with the General Staff, and while extraordinary benefits have already been derived by the Associated Companies from this work, much more is being done.

The loading principle is applicable both to cables and to open wire construction on poles. Its application was first worked out for ordinary overhead wires and for ordinary underground cables, and the results were placed at the disposal of the Associated Companies. The Missouri and Kansas Company has greatly and directly benefited from this development. Loading has been applied extensively to the interoffice trunk cables and has resulted in a saving in first cost of plant (1916) of at least $150,000. The saving in annual charges against operating income for this reduced investment is not less than $20,000. The loading of open wire circuits

has resulted in a saving of over $260,000 with annual charge savings of not less than $36,000.

For some time after the loading of ordinary open wire and cable circuits was developed and made available for use of the Associated Companies, there was no way known of applying loading successfully to phantom circuits and duplex cables. The Associated Companies were therefore confronted with the situation that the use of phantom circuits excluded on such wires the use of loading, or, if they desired to take advantage of loading, they would be excluded from the advantages of using phantom circuits. The General Staff devoted themselves diligently to this problem and they have developed, and placed at the disposal of the Associated Companies, methods by which it is possible not only to load the physical circuits, but also to load the phantom circuit.

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Through the application of loading to the long lines extending between its territory and those of the other Associated Companies, and through its application to lines and cables of other Associated Companies with which they connect, it has greatly extended the distances to which subscribers of the Missouri and Kansas Company can obtain telephone service, and has very much improved the service to places situated at more moderate distances where, prior to the development of loading, conversation was possible, but not as satisfactory as at the present time.

Other Means of Improving Speech Transmission:

In addition to this development of the art of loading, the General Staff for many years has conducted exhaustive studies to extend still further the range through which it is possible to transmit speech with the end in view that subscribers in such a city as Springfield would be enabled to talk satisfactorily with subscribers in any other city or town in the United States, however distant it might be. As a result of this work of the General Staff it is now possible to talk with ease from Springfield to the other principal cities in the Union.

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It is not only in improving transmission to points outside of its territory that these achievements of the General Staff are of benefit to the Missouri and Kansas Company, but they are of such a nature that they will have important applications within the trunk line plant of the Missouri and Kansas Company itself, greatly improving transmission not only from points on their lines to points outside of their territory, but also between points within their own territory.

Several installations of the amplifying devices by which these results are attained have already been made in the territory of the Missouri and Kansas Company, resulting in notable improvements in transmission.

By means of this installation, at a cost of only a few thousand dollars, results have been accomplished which would otherwise have required the expenditure by the Missouri and Kansas Company of many thousands of dollars. Even with these very large expenditures, it is doubtful if the results which have been accomplished could have been obtained equally well. Another installation, now planned for,

will increase further the benefits to the service of the Missouri and Kansas Company and the subscribers connected thereto.

Inasmuch as these improvements are the subject of patent matters now pending, it is not practicable nor is it necessary to enter into a technical description of them. It is, however, proper and very interesting to point out in general terms how the solu-
855 tion attained by the General Staff differs from that proposed by a number of European scientists, as well as by a number of American inventors.

The method of attack adopted by these other scientists and inventors was to employ special and most ingenious and complicated apparatus, batteries, switches and transmitters at the subscribers' stations. From a prolonged study of the problem, the General Staff concluded that the solution was not to be found in this manner, but rather was it to be found in improving the methods of line construction and equipment and by the developing and introducing of intermediate apparatus into the trunk lines.

This method of attacking the problem, adopted by the General Staff, has met with complete success, so that subscribers in Springfield can talk over distances vastly greater than ever before possible and, before long, will be able to talk everywhere throughout the United States. This they can do without any expense to the Missouri and Kansas Company for new construction and without changing even a wire or any piece of apparatus of any kind pertaining to subscribers' stations, subscribers' lines, or local switchboards.

To be able to extend so greatly the effective talking range of every telephone in the territory of the Missouri and Kansas Company without the expenditure of even one dollar for construction or reconstruction in subscribers' plant, or line or cable or switchboard is an achievement of the greatest importance and value to the Missouri and Kansas Company and every telephone user in the State.

The value of this achievement is emphasized still further
856 when it is understood that, by means of the solution proposed by the European scientists, even if it were found to be practical in a laboratory way, it would be necessary to reconstruct each subscriber's telephone station, as well as the central office and other switchboards, and much of the line plant in order to extend the range of transmission. Even then, with the enormous expense of reconstruction which would be entailed, the results would be more expensive to the public and vastly inferior to those now obtainable by telephone users in Springfield and elsewhere throughout the State of Missouri.

Wireless Telephony.

In working out the wire problems just referred to, the Engineers of the General Staff recognized that they had developed certain scientific facts, methods and devices which might, by further work, successfully solve the problem of wireless telephony. Work was, therefore, directed to this problem with results which were conclusively demonstrated when, during 1915, speech was successfully transmitted through space across the continent of North America

from Washington, D. C., to San Francisco, and also from Washington to Hawaii, as well as across the Atlantic Ocean to Paris. These results achieved by the General Engineering Staff were so remarkable that they have attracted the attention of laymen all over the world.

The problem of connecting wires and wireless system has been solved by the General Engineering Staff so that persons speaking at the end of a wire into a standard Bell telephone have talked over the wire, hundreds and even a thousand miles long, and at the
857 other end of the wire connected with a wireless station equipped with our wireless system and thus extended the connection by means of the wireless system across the ocean or to a moving ship at sea. This has been accomplished by apparatus developed, designed, manufactured, installed, and operated by the General Staff and the engineers of the Western Electric Company.

The Engineers of the General Staff have studied with much care the possibilities and limitations of wireless telephony and its place in a comprehensive telephone system. It may be confidently stated that wireless telephony will supplement but not displace the wire system. It will serve to connect the wire system with ships at sea, steamers navigating rivers like the Mississippi, Missouri and Ohio, across large bodies of water and with other places where conditions make it impracticable to extend wires or where such extension would be extraordinarily difficult and costly. Peculiarities of wireless telephony, inherent in it, seem to limit its commercial application to such conditions.

Systems of Farmers' and Rural Lines.

The farmers' or rural line depends for its success upon the ability to operate a large number of stations on a single circuit, known as a "party" line. In the early days of the business all attempts to give satisfactory service of this kind failed, it being found that the presence of two or three stations on a line seriously impaired transmission, and that, with as many as five or six, successful transmission of speech was out of the question.

After a great deal of experiment and research extending
858 over many years, a very simple method was devised whereby, without in any way interfering with the transmission of speech or causing disturbance upon the line, as many as a dozen or twenty, or even more stations could be attached to one circuit.

This development of the telephone into the homes of the farmers and small storekeepers and others of a like character in rural districts constituted one of the most gratifying developments of the telephone art. Not only has it greatly simplified many problems for the telephone companies, and extended their business, but it has been set down by competent authorities on political economy and social subjects as a factor which by destroying the isolation of the farmer has produced a wonderful improvement in his economic and social life by placing him in constant touch with the markets and sources of

supply and with the weather bureau and providing for his family a ready means of communication available not only for social purposes, but also at all times a ready means for summoning help in the event of danger or sickness.

Party Lines in Cities.

The same principles which have permitted rural line service to be given have been applied to the subscribers' station apparatus in city exchanges, enabling those having but little use for the telephone to obtain service on a basis which would be otherwise impracticable. In this way, the service, by reaching out so to include the small users, has been rendered more valuable to the larger users, who, of course, require direct lines.

Such services as these, which were rendered by the General
859 Staff in connection with the development of rural and city party line apparatus are obviously of very great value to the Missouri and Kansas Company, but it is easy to see how difficult it would be to place a pecuniary value upon them.

Fundamental Plans and Development Studies.

To convey a proper understanding of the broad and underlying scope of fundamental plans it is necessary to describe their character. The telephone systems of the Associated Companies are constantly growing, not only in the number of stations, but also in the amount of business handled, and this growth must necessarily continue in the future.

The Company undertaking to supply a city with telephone service cannot select only those customers in the downtown district which it would be most convenient to serve and neglect the others. It must be prepared, within reasonable limits, to supply service to the outlying residence districts also. For this purpose telephone buildings must be erected, switchboards installed in them, and underground conduits and overhead lines built connecting the central offices and extending from them to the subscribers' stations.

In providing this plant economic questions constantly arise as to where the various parts shall be located and how large they shall be and what provision shall be made for future growth. It is the province of the study the results of which appear in the fundamental plan to answer these questions along broad lines.

As an illustration of one feature of fundamental plan work, it is obvious that the number of ducts which should be installed in ad-
vance of the immediate needs is a very important engineering
860 and economic problem. If but one duct is put down now and another one is needed the following year, manifestly a waste of money will be incurred due to removing the pavements and making a new excavation the following year and restoring the pavements again. To provide for the future, therefore, by digging up the street each time a new duct is needed would cause a great waste of money.

On the other hand, to take an extreme case, if a sufficient number of ducts were put down to provide for the needs of one hundred years, even assuming that one could forecast accurately for such a long period, another waste of money would take place, for the interest and other annual charges upon this advance construction for so many years would more than offset the saving which would be made by avoiding the repeated excavations. As a result of a great deal of work which the General Engineering Staff has done on this subject, it has been found that in the cities of the United States, as a general thing and under average conditions, the most economical period for which to provide ducts in advance is from seventeen to twenty years.

A similar state of affairs exists with respect to buildings. It is impossible to buy land in small parcels year by year and add portions of the building exactly cor-esponding with the growth of the system. This is also true of the switchboards going into the building and the ultimate capacity of the switchboard, as well as of the building, must be determined at the beginning, although not necessarily fully equipped at the time.

861 Unless all of the factors pertaining to growth which I have mentioned, and many others, are carefully studied and analyzed, no one could tell what size of building or switchboard should be planned for, nor could it be known how many buildings or switchboards would be required, nor where they should be located, nor how many ducts should be put down in each underground conduit run. These factors have to do with the most expensive portions of the plant of the telephone company. This constitutes in the mind of those who have studied this problem a serious business hazard that cannot be avoided by the telephone company, which must take the risks involved.

Recognizing the far-reaching importance of these considerations, the General Staff made this the subject of prolonged investigation and years of study the result of which was to devise methods of making fundamental plans which minimize as far as possible the losses growing out of these conditions which are inherent in the telephone business.

The General Staff, owing to its nation-wide experience in these matters, has experts who have specially studied the growth of all parts of the United States and who have given continuous attention to this matter of development. These experts are placed at the disposal of the officials of the Associated Companies, and, utilizing all the information obtained from the administrative and commercial officials of the Associated Companies, who are thoroughly familiar with the local conditions and tendencies, the most trust-worthy forecast that is possible is made of the number and location of subscribers and the probable character of the business for a long period ahead.

862 By the careful attention which is given to this important matter, the sources of error are reduced as much as possible. They cannot be and are not eliminated. Accordingly, therefore, the

fundamental plans based upon the e forecasts must be revised every few years so as to be adapted to changing conditions.

The fundamental plans effect great savings by avoiding errors of inconsistency which would otherwise be present if no fundamental plan existed as a guide. Having a fundamental plan to start with, it can be modified every few years to meet the exigencies of the situation with very much greater economies than would be the case if no fundamental plan were available. The value of the construction to be based upon the fundamental plans which have been made for the Associated Companies as a whole would reach an enormous figure. Some idea of its magnitude may be gathered from the fact that based upon the fundamental plans of Kansas City alone, construction has already been or will be carried out in the near future to the amount of over $8,000,000. It would be difficult to overestimate the importance of the service rendered by the General Staff in this matter of fundamental plans and development studies, and although no method exists for exactly evaluating its worth, this service to the Missouri and Kansas Company must be set down as having a very great value.

Development and Standardization of Apparatus.

It is desirable to employ apparatus of a uniform type or standard in all places where the conditions permit. The great importance, from the standpoint of economy and efficiency of service, of
863 this matter of standardization in a vast telephone system such as that of the United States, requires, on account of its magnitude, much consideration in order to be appreciated.

Unless there existed a general staff for the establishment of standards, there would be a multiplicity of types of nearly every one of the thousands of pieces of apparatus composing the telephone system of the country, and this would result in an impairment of service and lack of economy and efficiency in many ways, only a few of which will be mentioned here.

In the first place, intercommunication between divergent types of apparatus would render the engineering and operating problems vastly more complicated than where standardized types are used; and in the second place, the costs of apparatus would be substantially increased because of the increased cost of developing and manufacturing and carrying in stock ten or a dozen, or even more, different types of apparatus where one would answer. If this development work were not done for all of the Associated Companies together, each of them would be required to have a separate development staff, thus greatly multiplying the total engineering expense of the companies as a whole, as well as increasing the price which they would have to pay the manufacturer. There is no doubt that by this standardizing, the Associated Companies including the Missouri and Kansas Company, are getting their apparatus at a smaller figure than they would if there were, for each of the hundreds of different kinds of apparatus, ten or more standards instead of
864 one, as is now generally the case with the apparatus that they use.

There is, going into their various plants in an average year, the following amount of apparatus and material to which the benefits of standardization apply:

Central office and sub-station equipment, about	$18,000,000
Lead covered cable, about	9,000,000
Other material, about	19,000,000
Total	$46,000,000

By some who are competent to judge in such matters it has been said that a saving of 5 per cent. in the price which the Associated Companies pay for such apparatus is fairly chargeable to standardization; but even assuming a figure of only 2 per cent. there is an annual saving to the Associated Companies, including the Missouri and Kansas Company, of about $900,000. Whatever the true saving may be, I think I have said enough to show that this matter of standardizing is of very great importance to the Associated Companies.

I will explain somewhat further how this matter of standardizing is brought about. The General Engineering Staff is located at New York, but is in close and constant touch with all of the Associated Companies by direct studies, sometimes of long duration, conducted by General Staff engineers in co-operation with the local officials in the territory of the Associated Companies, and by visits of the officials of the Associated Companies to New York, and by con-
865 stant correspondence, reports, statistics, specifications, bulletins, etc.

By these methods the General Staff is at all times in close touch and full sympathy with the exact conditions and difficulties arising in each locality. A new difficulty arising in an Associated Company, which demands the adoption of a new standard, is studied in the first instance with the utmost care, so as to get exactly the local point of view, and to take full advantage of the ideas and suggestions of those who first encountered the difficulty.

The matter is then studied in the light of the information gathered from the other Associated Companies, and from the valuable records and experience of the General Staff, and from any and every other source, whether in this country or abroad, which might be helpful. The aim is to determine, first, what are the real needs of the situation. This having been arrived at, engineers of the General Staff, expert in the particular line in question, are set to work to develop the best apparatus or method to meet the new situation.

If the case happens to be one requiring the development of apparatus, the requirements of the case are laid before the Engineering Department of the Western Electric Company, with instructions to proceed with such development. A statement of the results which must be accomplished by the apparatus is given and certain cost limitations are fixed. These engineers are not restricted as to method, but are held closely to results, and the General Staff engineers see to it at all times that, in connection with the development of any

apparatus, full and complete consideration is given to all
866 questions concerning operation, maintenance, and the economies of the problem.

At all times, therefore, the development of apparatus is under the control of General Staff engineers thoroughly familiar with and having due regard for the service requirements. During the course of their work on the development of this apparatus, Western Electric engineers are in constant touch with the engineers of the General Staff, and when a successful apparatus is devised, it meets the approval of the General Staff, the Associated Companies being consulted at every point where necessary.

If the price is satisfactory, the apparatus is finally made standard and recommended to the Associated Companies. Wherever practical trials are necessary these are made once and for all under the direction of the General Staff, and do not have to be duplicated by the Associated Companies, thus in another way making important savings for them and practically eliminating wholesale experimentation upon the public.

This matter of standardization illustrates very well the nature of the relations between the Engineering Staff of the Western Electric Company, the Engineering Staffs of the Associated Companies, and the General Staff which has general supervision over the technical methods of all.

The officials of two of the European administrations, in assigning a reason for the backwardness of the telephone in Europe as compared with America, have gone so far as to say that they ascribe the superior development of the telephone in America to this close working arrangement with the Western Electric Company. An
officer of one of the most prominent electrical manufactur-
867 ing corporations in Europe made a similar statement in accounting for the superiority of the Western Electric Company as a telephone manufacturer.

While I think these foreign officials, in forming this judgment, have overlooked other factors which have been at work, my own knowledge of the telephone operating and manufacturing business in America and in Europe convinces me that this intimate, efficient and harmonious working arrangement between the various sections of the General Staff, the Western Electric Company, and the Associated Companies has been one of the important factors in placing America at the head of all countries in the matter of telephone service.

It is not only the equipment, personnel and achievements of the different departments of the General Staff, but it is also the favorable nature of this relationship, broadly considered, which must also be taken into account in judging of the value of the services rendered to the Missouri and Kansas Company and in estimating the capabilities of the institution which renders those services. Without these relationships these services could not be rendered.

Development and Standardization of Switchboards.

All that has been said above with respect to the development and standardization of apparatus applies to switchboards, including not only the large central office equipments where the subscribers' lines are interconnected, but also the smaller and very numerous switchboards located at subscribers' stations, particularly in business offices, factories and hotels, and known as private branch exchanges.

868 From the first telephone switchboard installed by the Bell Telephone Company at Boston, with its equipment for 7 stations, to the magnificent switchboard of today, providing in some cases for as many as 20,000 stations and forming part of a switchboard network giving intercommunication to millions of telephone users, the General Staff has been the controlling factor in this remarkable development. Always keeping abreast of the requirements and usually being in advance, they have supplied the needs of each period of telephone growth and the most successful results in switchboard design achieved anywhere have been due to them.

Although it is unnecessary to describe in detail the great importance of the work of the General Staff in the development of the various switchboard systems which have been produced to meet the demands of the service, it will be neces-ary to describe at least one development as illustrating the character of the whole.

At one time, even in the largest cities, the telephone subscriber was required, in order to signal the central office, to turn a crank connected to an electrical generator which operated both a bell at this station and an enunciator before the operator in the central office. When he had finished his conversation he was expected to turn the crank again, or "ring off," as it was called, thus notifying the central office operator to disconnect. Subscribers frequently forget to "ring off" and the operator consequently was slow to disconnect, because in order to find out whether the subscriber had finished talking it was necessary for the operator to "listen in" upon the line and ask "waiting?" or "are you through?"

869 With this system of switchboards, there were several cells of electrical battery at each subscriber's telephone. This made it necessary for the Associated Companies to employ a large staff of men constantly visiting the subscribers' stations to renew and repair these batteries.

After a great deal of inventing, experimenting and developing, a switchboard system was devised, known as the "common battery" system, which today, all things considered, represents the highest development of the switchboard art for offices of sufficient size. It did away with all of the batteries at the subscribers' stations and substituted therefor one large storage battery at the central office common to all of the subscribers' lines.

In addition to this it greatly improved the service at the large central offices by enabling the operators to tell at a glance, from the appearance of two small electric lamps, when the subscribers had finished talking, and then to disconnect them without listening upon the line or disturbing the subscribers in any way. More than this,

in large centers, the greatly improved signalling methods and many other advantages which were introduced into this new switchboard vastly simplified the work of the central office operators, improved the service, and removed most troublesome annoyances from the public.

The development of the common battery switchboard, briefly referred to above, did not end the switchboard development work done by the General Staff. Other work of the highest importance pertaining to switchboards and switchboard apparatus has been done and is being done at the present time. The nature and value of such work to the Associated Companies may be inferred from
870 the following brief statement in reference to a few such developments.

The line and cut-off relays associated with each subscriber's line terminating on a common battery switchboard form a very important part of such switchboards. Development work by the General Staff has resulted in making available, for the Associated Companies, line and cut-off relays of such design and construction that they are not only cheaper in first cost, but superior from a maintenance standpoint to the relays formerly available.

The Associated Companies are now getting these new relays and by their use it is estimated that the first cost of the switchboards purchased by the Associated Companies in a year is reduced by more than $150,000. This figure takes no account of the improved service and maintenance economies which will result from the use of such relays.

This item of work well illustrates one phase of the activities of the General Staff on behalf of the Associated Companies. Every piece of apparatus developed is most carefully studied and scrutinized and tested by the engineers of the General Staff in order to make sure that the very best results from a service and maintenance standpoint are attained.

In connection with incoming trunk circuits, which form an essential part of the switchboard equipment of multi-office telephone systems, important improvements have been made. Special incoming trunks have been perfected which, where conditions are suitable for their use, make important operating economies as well as improving the telephone service. For situations where such trunks
871 cannot be employed, other trunks operating on the so-called "mechanically locking key" principle have been developed and perfected so that substantially the advantages of keyless trunks are obtained.

To illustrate the savings that result from various improvements in switchboards I will mention the work done on switchboard cords. Two large moves have been made in this matter, since the development of the improved types of switchboard referred to earlier, which have resulted in cords that reduce maintenance and improve the service. In the item of maintenance alone, this development of cords by the General Staff is now saving the Missouri and Kansas Company over $30,000 each year. For the City of Springfield the saving is about $1,700 per year.

Development and Standardization of Telephone Building Arrangements.

Telephone central office buildings must be designed and erected with due regard to accomodating the telephone switchboard and its associated apparatus, and the operating and maintenance forces required in connection therewith.

Many considerations must be taken into account in the design of a such a building, not only with reference to the initial use to be made of it, but also to the fact that it must be capable of economical and satisfactory extension, as the business grows, to provide for the additional equipment and forces that must be installed in it.

Much work has been done and the results placed in the hands of the Associated Companies, and much more work on this matter is still being done so that the Associated Companies are kept
872 fully informed of the latest and best known practices. With this information before them the Associated Companies are enabled to incorporate their local requirements into the general plans, thereby providing in each case the best and most economical building.

Development and Standardization of Outside Plant.

The General Staff maintains a corps of experts, giving constant attention to the standardization of the outside plant and the materials used in its construction. This work is peculiarly important on account of the enormous amount of money invested in the outside plant and the very large additions made to it each year by the Associated Companies to meet the increasing demands for telephone service.

If each Associated Company built pole lines, for example, without regard to established standards which had been carefully developed as a result of exhaustive engineering studies, a wide diversity of practice would result in the design, dimensions, strength and durability of each and every one of the many parts required. As a result of careful study and experimental research on all of these matters, taking into account the loads due to wind and sleet, changes in temperature, and all of the other factors, designs have been worked out on a sound engineering basis. By placing the results of this work in the form of standard specifications, the Associated Companies are advised of the most economical and efficient arrangements for meeting the various conditions. By this standardizing, costs of materials are reduced and more prompt deliveries are made possible.

873 Standard specifications prepared by the General Staff and covering in great detail all of the work of building pole lines from the smallest two-wire line to the heavy 60 and 80-wire lines are used by each of the Associated Companies throughout the United States.

A long treatise could be written about the continuous and exhaustive study by the General Staff of the preservative treatment

of poles, crossarms and other wood used in outside plant construction. The character, quality and quality of preservative material, detailed methods of impregnation, variations in treatment required for different kinds and classes of wood, effects of seasoning, and the economics of preservation have all received complete consideration, and the Associated Companies have been furnished with most valuable engineering data and specifications embodying the results of all of this work.

While, in general, present conditions do not justify the use of reinforced concrete poles or other substitutes for wood, investigations are constantly being made so that at any time when the cost of wood poles or other conditions make it desirable to use some material other than wood, full engineering data and experience will be available to enable the Associated Companies at once to proceed intelligently in such use.

Similar development work to that described above for pole lines has been done and is constantly going on with reference to all other parts of the outside plant. Underground conduit and cable construction, aerial cable and twisted pair distributing plant, and many other similar subjects are all continuously studied, and all
874 necessary information furnished the Associated Companies advising them as to the best practices in all these matters.

All new suggestions, whether arising here or abroad, whether coming from the engineers of the General Staff or elsewhere, are studied and tested with great care and, if found to have a proper place in the telephone system, are incorporated in the specifications so that, at all times, they represent the best practices.

Handbooks are prepared whenever the conditions are such that the Associated Companies would benefit by having the specifications in that form for use by their field forces. They are in general use by all of the Associated Companies, including the Missouri and Kansas Company. Appendix "D" contains typical specifications and handbooks.

Standardization has also been extended to various branches of maintenance work. For example, standard specifications, prepared by the General Staff and in the hands of all Associated Companies, describe uniform methods for inspecting pole lines so that poles may be replaced with due regard to the importance of each line, its exposure to the elements, and the wire leads which it carries. Specifications for economically reinforcing poles which have decayed an excessive amount near the ground line have been developed, standardized and placed at the disposal of the Associated Companies.

There are hundred of specifications, prepared by the General Staff for the various types of outside plant and the materials used therein, which form the basis upon which practically all of the outside plant is built and the materials purchased. The savings resulting from the foregoing are difficult to evaluate, but they must necessarily be large, for in the case of the Missouri and Kansas
875 Company alone, these specifications enable them to construct and maintain, in the most economical manner, outside plant at the present time valued at over $11,000,000.

Interference from Electric Light, Railway and Power Lines.

The disturbing noises which were experienced on telephone lines, usually as a result of their proximity to neighboring telegraph and telephone wires, were so greatly increased by the introduction of the electric light that unless a remedy had been found, further extension of the telephone would have been impossible.

The General Engineering Staff worked upon this problem for years, and in course of time found a satisfactory solution for each one of the difficulties encountered.

Two wires for each circuit instead of one greatly helped to overcome the troubles, but this was not a complete solution. Years of further work resulted in the transposed metallic circuit for open wires and a special method of twisted pairs for cables.

As new systems of electric light railway and power circuits were introduced, the character of the difficulties changed and their magnitude greatly increased, so that, for each change in the art of transmitting strong currents, the telephone art had to me modified to prevent service from being destroyed.

In general, it may be said that the work of the Staff has been continuous and arduous, keeping pace with the growth of
876 electric light and power systems, and that, while we have now before us many unsolved problems growing out of recent development in railway and power work, the situation in general is well in hand.

It is impossible to assign a definite value to this service rendered to the Missouri and Kansas Company, but the work and the results are of such a vital character that the savings, if they could be evaluated, would be very great, indeed, for unless these results were obtained, the telephone would be restricted to a small number of wires of moderate length in each locality, and anything approaching a comprehensive telephone system would not be possible.

Another phase of the relation of high tension light and power wires to telephone wires is the hazard to life and property growing out of the possibility of contact between the two classes of wires. The Staff attacked this problem in two ways: First, by developing protective apparatus for installation at sub-stations where the line is exposed to outside hazard; Second, by adopting proper rules for outside construction in order to avoid the trouble at its source.

For the Associated Companies the matter of arriving at standards of construction involving relations with light and power wires was greatly simplified because the General Engineering Staff was in a position to act for all of them. On the other hand, the innumerable local light, railway and power companies could act only through national associations meeting infrequently. The Staff took up methods of standard construction with these national associations
877 and, after several years of work, arrived at an agreement covering a large part of the questions at issue. Further questions have recently come up with reference to these matters and the General Staff is carrying on the work. The Staff

has also worked with representatives of the electric railways of th
United States on methods covering the joint occupancy of pole
so far as it relates to electric railways, with results that will benef
the Associated Companies. The Staff, representing all of the Ass
ciated Companies has studied and fully discussed with represent
tives of the steam railroads of the United States, the question
proper and economical methods for carrying telephone wires acro
such railroads. Standard specifications describing the results
this work have been agreed upon and issued. Experience with the
national bodies has brought out clearly the great advantage of th
General Engineering Staff to the Associated Companies, as it n
only saved for each of them years of difficult and annoying wor
but it has indicated that, in all probability, without this centralize
method of handling the problem, no proper standards could hav
been arrived at.

An exhaustive investigation of inductive interference on telephon
circuits, due to parallel high tension power circuits, is being carrie
out in the territory of one of the Associated Companies. The matt
having come to the attention of the State Commission havin
jurisdiction in the territory in question, a committee was forme
under the auspices of the Commission, on which are representativ
of the Commission, the telephone company, the telegraph companie
and the power companies. The telephone part of this wor
878 is being directed by representatives from the General Staf

The results of this work, which is still in progress, will b
of the greatest value to all of the Associated Companies. The i
ductive disturbances are being considered comprehensively, the
nature and magnitudes ascertained, and studies made of the effec
of changes in the telephone wires and equipment, and in the pow
wires and equipment and methods of operation, and from these te
most complete data will be obtained as to how to meet the inductiv
disturbances which are produced by the extra high potential pow
circuits which have recently been extended so greatly.

In connection with the subject of national standards, the work
the General Staff in connection with the Electrical Code of th
National Board of Fire Underwriters is notable. This code
amended every two years and prescribes rules and methods whic
must be followed wherever electrical construction is undertake
which might affect a fire hazard insured by any insurance compan
in the United States. A branch of the General Staff is constant
following this insurance code, studying all developments pertainin
thereto, so as to be ready at the proper time to lay before the Nation
Committee any and all facts and arguments necessary to guide the
in their legislation respecting matters affecting the interests of t
Associated Companies. In this way we co-operate harmonious
with the insurance authorities and the other National bodies
as to produce a reasonable set of rules with a minimum of hardsh
to the Associated Companies.

From the nature of the case the savings resulting from
879 of this work cannot be definitely evaluated, but I know th
they are of the greatest value to the Associated Compani
including the Missouri and Kansas Company.

Electrolysis.

Electrolysis, or the destruction of underground metallic structures by the action of electric currents coming from street railway systems and returning through the ground to the power station, is a trouble familiar to all having to do with any extensive system of underground cables. This matter has been the subject of much study by the General Staff, and from time to time the Associated Companies have been advised as to the best and most effective methods of meeting this difficulty and much special engineering advice has been given to Associated Companies with reference to this question. At the present time important studies and negotiations are being made by the General Staff looking to meeting electrolysis conditions that, with the growth of both traction systems and telephone systems, are requiring further constant attention. In this work the General Staff is co-operating with other utility representatives through the American Electrolysis Committee.

Work in Connection with the Insurance Department.

The American Company maintains an Insurance Department for the benefit of the Associated Companies. In co-operation with the General Engineering Staff, this Insurance Department has worked out standard arrangements and standard types of construction for telephone buildings, and standards for the maintenance and
880 inspection of these buildings, so as to reduce the fire risk and insurance rates to a minimum and to insure the safety of the telephone service and of the employes.

Inspection of the buildings of the Associated Companies are made from time to time by the Insurance Department and advice given as to improving conditions if any defects are found.

The Insurance Department has made available for the Associated Companies standard forms of fire insurance policies which offer better protection to the property than did the various forms of policies previously used.

As a result of this work, large reductions have been made in the insurance premiums paid by the Associated Companies. In 1915 the average insurance rate which the Associated Companies paid was less than 50 per cent of that paid in 1910. While perhaps certain other factors have been at work which have contributed somewhat to this reduction in insurance premiums, there is no doubt that the work of the insurance department has contributed very largely to the result. The value of the services, not only in reduced premiums, but also in improved conditions, is great.

Development of Improved Traffic Methods.

The term "traffic," as used in telephone practice, relates to the connecting and disconnecting of lines, including subscribers' trunk and toll lines; to the routing of calls so as to produce the most

prompt connection over the most direct and feasible routes; to
881 the grouping of wires in the most efficient and economical units for interconnection; and to the most efficient loads for different classes of circuits and for operators at the various classes of switchboard positions.

Traffic work also includes the establishment of rules providing the most prompt and economical methods of working for operators of all classes; the determination of the constantly changing requirements of the service from the subscriber's point of view, whether upon local, trunk or toll lines; the development of proper and significant records covering service, efficiency of operation and data for engineering purposes; and the formulation, dissemination and application of significant data and statistics pertaining to almost innumerable detail matters relating to the interconnection of telephone lines.

In a great many cases the successful development and standardization of the numerous parts of the telephone plant would be impossible unless preceded by the careful study and development and standardization of traffic methods.

The accuracy of the traffic data and the efficiency of the traffic methods exercise a fundamental influence upon the character of the service rendered to the public, the costs of handling the traffic, and the costs and efficiency of the plant. Traffic methods affect very largely the size and arrangement of switchboards, which in turn affect the size and arrangement of the central office buildings. In the same way the degree of efficiency of the traffic methods has a great influence in determining the number of trunk and toll
882 lines which, in turn, affects the number and size of the cables conduits, pole lines, and open wires.

Traffic problems are intricate and difficult, and unless the plant is constructed so as to conform to the best traffic methods it will not successfully perform its functions, however solidly it may be constructed, or however admirable it may be in other respects.

For this reason the General Engineering Staff has recognized the importance of traffic studies and methods, and, as will be seen by reference to the diagram of organization (Appendix B), it maintains a large group of engineers devoted entirely to this branch of the work. On this subject, as well as the other discussed elsewhere, volumes would be required to describe comprehensively the activities of the General Engineering Staff on behalf of the Associated Companies.

Improvements in the Efficiency of the Toll Plants for the Associated Companies.

The Staff, through its work at headquarters, and through its engineers working in the territories of the Associated Companies, has devised and applied improved methods for establishing toll centers through which the toll traffic for the surrounding territory can be received and distributed most economically, and determining which is the most efficient grouping of the toll lines, and arranging

the plant so that these groups can be established. In connection with this work, the trend of the traffic, and the most economical and expeditious routing are determined. The work having primarily to do with the flow of traffic over an intricate network of
883 wires, its advantages are largely manifested in the plant itself. There are also improvements in the speed and certainty of the connections. The economies and improvements in the service have varied with the amount and character of the toll traffic and toll plant of each territory, but, taking the country as a whole, the savings have been very large. It is not possible to trace all of them directly, as some were intricate in their nature, resulting, in general, in improved service to the public and in enabling the companies to handle their growing business for a longer time upon the existing plant, and in many cases enabling them permanently to handle an increased amount of business with a given plant, thus reducing the plant investment and the annual charges thereon. There are trustworthy statistics showing that the savings, for the Associated Companies as a whole, from the applications which they have made of the results of the above work, amount to a very large sum. For the Missouri and Kansas Company the annual saving will amount to at least $19,000. The work which the General Staff is doing along these lines is continuous, and the engineers are devoting their entire time to the consideration of problems affecting the efficient and economical use of toll plants. From our knowledge of the subject and the work now under way, we expect to devise still further improvements resulting during the next few years in further large savings, at the same time making additional improvements in the quality of service rendered the public.

884 Improved Traffic Records.

One of the most important factors in giving the highest grade of service and in the efficient operation of the telephone system is the determination of methods for making significant and accurate records of the service being rendered and the operating work accomplished. This whole problem has been the subject of most careful investigation on the part of the General Staff with very successful results. For an illustration, take the records of work done by operators technically known as "peg counts." These records form the basis not only of the number of operators that are provided but also of the amount of switchboard and building space. It is not a simple matter to obtain accurate records of this sort, and when we consider the large expenditures for operators' salaries and for building and equipments, it will be evident that the telephone companies may easily waste large amounts of money if accurate records are not available. If the peg counts are in error by showing more work to be done than is actually the fact, money will be wasted by providing more operators, equipment and building space than is necessary. If, on the other hand, the records are in error by indicating less work to be done than is actually the case, the service will suffer and mistakes may be made in the engineering of buildings and equip-

ment which will be very expensive to rectify. Investigations carried on by the General Staff have shown that in the past many peg count records were not sufficiently precise. After a careful study of the problem, improved methods for making and checking peg
885 counts have been devised. It is now possible to obtain very precise records of this sort and this has been an important factor in improving the efficiency of operating work. Not only have the Associated Companies been informed as to the best peg count methods to employ, but engineers from the General Staff periodically visit all of the companies, assisting the people in charge of these records to take all of the many precautions necessary to insure accurate work along these lines.

In order that operating work may be maintained at the proper efficiency, it is, of course, necessary that accurate records be available in regard to all the significant features of that work. It is not enough, for instance, to simply count the calls handled by the operator, since different classes of calls require very different amounts of the operator's time. From the complex nature of operating work, it is a difficult matter to determine with precision the relative amount of work required to handle calls of different classes. The General Staff has made careful investigations of this general subject and has conducted series of experiments over several years, with the result that methods have been made available to the Associated Companies by means of which the operating work for handling all classes of calls can be equated to a unit basis. By means of these and other improved records, it is now possible to determine more precisely than has heretofore been practicable the operating work accomplished and the Associated Companies are now in a better position to make those comparisons between the operating work in different offices
886 which are so essential to the efficient administration of that branch of telephone work. With the constant improvements that are being made in operating practices and equipment, it is necessary to study continuously all these matters relating to operating work and to revise from time to time the various factors employed. The General Staff has assigned a group of experts to work of this sort and it is being carried on continuously.

In the matter of service, the Bell companies do not wait for complaints from subscribers to indicate that conditions are not satisfactory, but they make continuous routine tests of the service so that they are informed at all times as to just what grade of service is being given. The General Staff has made thorough investigations of all matters relating to service and the observation thereof, and the Associated Companies have been informed as to the best practices to employ in all matters affecting service observations. As in the case with peg counts, the work of the General Staff does not cease with the issuing of circular letters and bulletins describing the best methods to be employed, but engineers regularly visit all of the Associated Companies, informing them of improved methods, learning the results of their experience and advising those in charge of this work for the Associated Companies as to all the precautions necessary to insure accurate service observing records. These representa-

tives of the General Staff also discuss with the Associated Companies all the various problems involved in giving the highest grade of service, and they make suggestions as to methods of improving the service which are the results of their own experience or that of other Associated Companies.

887 Development of Standardization of Improved Traffic Engineering Practices.

The traffic engineering work underlying the design of a telephone switchboard is a most important matter, and if the best methods are not employed, the telephone company may be subject to large losses due to the provision of equipment of the wrong kind; or an unnecessarily large and wasteful amount; or an insufficient amount which would hamper the operating force and render them inefficient and impair the service.

Engineers on the General Staff have given much attention to this matter with the result that information has been supplied to the Associated Companies, enabling them to engineer their switchboards and buildings so as to obtain the most economical arrangement consistent with good service and the efficient employment of the operating forces. General Engineering Circular No. 644, attached to this statement as part of Appendix D, is one of the circulars issued in connection with the standardization of traffic engineering practices, and gives a good idea of the importance and value of certain of the work along these lines.

Improvements in Local Operating Practices and Equipment.

888 In view of the prime importance of giving a high grade of local telephone service, all questions relating to such service, operating practices and equipment receive thorough and broad consideration by the General Staff. Operating methods are thoroughly studied and those selected as standard which give best service to the public. Improved methods have been worked out for determining the amount of traffic to be handled at all times and the effective adjustment of the operating force to this traffic. Much attention has been given to the equipment provided for the use of the operators and marked improvements have been made in the switchboards and associated apparatus. By the introduction of improved cord circuits and trunks for the use of "A" and "B" operators, by improvements in the use of "A" multiple, and multiple answering jacks and lamps, and by numerous other improvements in the switchboard arrangements, the work of the operators has been facilitated, and the service improved. The Missouri and Kansas Company, in common with all the other Associated Companies, has benefited largely, as a result of the work done by the General Staff along these lines, and the saving in local operating expenses and equipment has been very large. At Kansas City and St. Louis, for instance, where the records are available, the figures show that the

operators are able to carry a load from 18 to 25 per cent higher in 1916 than in 1906, without any more work on their part, due to these improved operating methods. This saving in operating, of course, also results in a saving of switchboard equipment. If records were available for the corresponding period for Springfield we feel sure that corresponding savings would be shown.

The Engineers of the General Staff are continuously engaged in the study of all problems relating to local operating practices and equipment, further improvements are constantly being made and may confidently be expected to continue.

889 Improved Toll-operating Methods and Equipment.

With respect to the increased efficiency in operating toll lines brought about by the work of the General Staff, very substantial results were obtained in reducing and simplifying the work of the operator, improving the promptness of connection, and increasing the effective use of the lines. In an important class of this work the operators' capabilities were increased materially without making the work in any way harder for them, the time required to establish the connection was reduced more than one-half, and the effective use of the toll line plant was materially increased. Marked improvements have also been made in the toll switchboards in the last few years, and many important features have been added which improve the service and facilitate the work of the operators. For the Missouri and Kansas Company there is a saving of at least $65,000 a year from the use of these improved toll operating methods, and for Springfield, figures show there is a saving of at least $2,100 per year in operating and equipment charges.

I have given above only a very few out of a large number of engineering studies, projects and developments which have been successfully carried out by the General Enginering Staff for the benefit of all of the Associated Companies, including the Missouri and Kansas Company. Those which I have given illustrate the general nature of the work which the Staff is doing for the Associated Companies. During the last five years we have completed over 700 subjects for them, nearly all of which were of substantial value to the Missouri and Kansas Company. A partial list of these is
890 given in the schedule which is attached hereto and marked "Appendix E."

The telephone art is not by any means in a finished or completed state. On the contrary the present problems upon which the General Staff is working are of as great importance and larger in number than those at any time in the past. The General Staff has now on hand more than 400 studies, projects and developments, nearly all of which are of very great value and importance to the Missouri and Kansas Company. A partial list of these engineering matters is attached hereto and marked "Appendix F."

To illustrate some of the methods which are employed in placing the results of these investigations before the Associated Companies I am attaching hereto engineering bulletins, specifications and handbooks relating to plant and traffic matters, marked "Appendix D."

To show the scope and comprehensiveness of the matters dealt with in engineering bulletins and specifications issued by the General Engineering Staff, I am attaching hereto as "Appendix G," a partial list of the circular letters and specifications that have been issued to the Associated Companies.

Class 2.

Specific Work Done by the General Engineering Staff on Problems for the Missouri & Kansas Telephone Company.

Under the arrangements existing between the American Company and the Missouri and Kansas Company, the latter is free to call upon the General Engineering Staff for consulting engineering ad-
891 vice and assistance in connection with any problems confronting them. The value of this, and the extent to which they avail themselves of this service will now be shown.

Fundamental Plans.

The nature and importance of fundamental plans have already been touched upon and the work which we have done in advising the Missouri and Kansas Company about the methods of making and using fundamental plans has been mentioned briefly.

In addition to sending complete information to all of the Associated Companies in regard to the methods for making and using fundamental plans, the General Staff has, at the request of the Missouri and Kansas Company, made or actively assisted in the making of several fundamental plans for a number of their most important cities, including Kansas City, St. Joseph, Wichita and Sedalia.

Fundamental Plan, Kansas City.

In 1910 the growth of Kansas City, both in the business and residence sections, had been such that the Missouri and Kansas Company was confronted with serious questions relating to the provision of additional telephone facilities to meet the rapidly increasing demands, and it was found desirable to have a new fundamental plan prepared of the Kansas City exchange territory. Additional switchboard sections and a considerable amount of additional outside plant had to be placed in the fast-growing residence sections, the location
of additional central office buildings had to be determined
892 upon, and at various points in the city additional conduits and cable relief must be provided.

At the request of the Missouri and Kansas Company, the General Engineering Staff undertook the Kansas City development study, having available the results of all their preceding work in creating and developing the art of making fundamental plans and development studies. In this connection, all experience of the General Staff in making similar studies throughout the United States was placed at the service of the Missouri and Kansas Company.

The object of the development study was to forecast as accurately as possible the probable telephone requirements of Kansas City at the future period for which it would be most economical to make the fundamental plan. Any of the fundamental parts of the plant, such as subways, building and switchboard, must be planned with due regard to the requirements in the future since it is only by such a plan that the Missouri and Kansas Company is enabled to anticipate and to provide, in advance for the growing business of Kansas City, so that as demand for telephone service arises it can be provided promptly, effectively and economically, in such a manner that the various parts of the plant, when constructed, will fit together into a harmonious whole.

The fundamental engineering plans are based upon the business forecast. This includes an estimate of the population of Kansas City expected in the year 1930. It requires that the number and the character of the telephone stations be forecast and that their probable distribution be determined. The character of the
893 telephone stations must be determined by classification into business, residence, party lines, direct lines, extensions, private branch exchanges, etc. This gives a basis for estimating the amount, character, and destination of the traffic. These factors, when determined, have an important effect in fixing the location, size and character of the trunk cables and subways, as well as the number of switchboard sections required, the location and size of the buildings, and the size of the lots on which the buildings are to be erected, and many other factors that might be mentioned.

The forecast of the future population of a city is a study in itself. The General Staff keeps informed continually with regard to all matters affecting growth of all parts of the United States. When we take up the estimate for a city like Kansas City we consider the tendencies affecting the whole great area which has relations with Kansas City. We also consider in detail the local conditions, plans and prospects of all sorts. The advantages of Kansas City as a center for manufacturing, jobbing, retail, professional and home life, etc., are thoroughly studied. As a result of such consideration, an estimate was made of the probable future population of Kansas City. A further and more detailed estimate was then made of the future population of the various parts of the city. Changes arising both from the development of land toward the outskirts, now vacant, and also changes of character within the regions already well settled being considered. This forecast of the number and character of future population was carried down to the fairly small divisions known as homogeneous sections.

894 A great many tendencies which we have observed in cities throughout the country were carefully considered with reference to their application at Kansas City. Tendencies of former excellent residence quarters to change, for example, into boarding house districts under certain conditions, the increased tendency to live in apartments, and the probable location of these apartments, the effects of automobile and rapid transit developments, and the effects of factory districts, of freight yards and their probable

growth, are examples of the consideration which were applied to Kansas City in estimating the population and character of the various parts of the future city.

In view of the importance and complexity and difficulty of making such a business forecast as is required to form the basis of these fundamental plans, a systematic investigation and study was undertakne by the General Staff to determine exhaustively in great detail the present and probable future development of the city of Kansas City which would be expected by the year 1930. This included not only the work of forecasting the population as above described, but also involved a detailed house-to-house study of the entire city of Kansas City and its suburbs. Carefully selected representatives of the Missouri and Kansas Company who were thoroughly familiar with each locality, co-operated with members of the General Engineering Staff and visited and surveyed each residence, apartment house, factory and business building, and other edifices within the city of Kansas City and its suburbs.

The number of residences, apartments, etc., and the approximate rent paid for each, were determined. The character of tele-
895 phone service associated with each of these classes was noted and the number of vacant houses and the lots was recorded. Business places of all kinds, their character, size and location, were noted and the character of the present telephone service was recorded. All other data were noted which might throw any light upon the nature of the business at present or during the period included in the forecast.

Many conferences were held with the officials of the Missouri and Kansas Company on these and on other matters bearing on the probable future use of the telephone. In these conferences we discussed with the officials of the Missouri and Kansas Company the existing conditions at Kansas City and prospects for the future. The representatives of the General Staff supplied information as to the existing conditions at many other cities whose size or telephone development might be of assistance in studying the Kansas City problem. Furthermore, they furnished much information regarding the results of careful development studies and fundamental plans which had been worked out for such other cities.

As a result of these conferences, and taking all of the "house count" and other evidence into consideration the representatives of the two companies decided upon the "commercial appraisal" for each homogeneous section of the city, that is, they agreed upon the probable future use of the telephone by each class of family or business in each small section of the city of homogeneous character. From these commercial appraisals, combined with the forecast of population, was produced the development study.

896 The fundamental plan for Kansas City was based upon such a development study as has just been described and was produced by applying engineering principles and methods which had been developed by long and careful studies by the General Staff. This engineering work involves the proper practice and costs of a large part of the telephone plant and operating. All the more prom-

ising combinations of future offices and districts were laid out and the costs from the present to the future were computed. In this work also the experience which we had had in other cities was very valuable in its application to Kansas City.

The fundamental plan showed that the expected stations and traffic in 1930 could be handled most economically by establishing, as required, additional branch offices at two wholly new locations, by the construction of an entirely new building in the business area, to replace the existing building, which would soon be outgrown, and by enlarging or adding to the equipment of several other existing central offices. Detail plans have already been completed for the construction of one of the wholly new offices shown to be necessary.

In 1916 conditions in the Central Offices and Outside Plant at Kansas City had reached a point where it was felt a new development study and fundamental plan should be made. To carry on this work the General Staff furnished advice and instructions and sent a skeleton organization to Kansas City consisting of men experienced in this line of work and who had with them complete data and new and revised methods developed from studies made in all parts of the United States. Working in close contact
897 and harmony with the Missouri and Kansas organization this force made a new study of the entire Kansas City Exchange Area, tabulating all data and making a population and telephone development forecast for 1934, which was the year thought best in this study. Full reports of the study were prepared, and together with a map showing the expected location of the 1934 telephone lines, left with the Missouri and Kansas Company.

Upon completion of this part of the work a representative of the General Staff came from New York, and in conjunction with the Southwestern Bell Telephone System engineers a new fundamental plan for Kansas City was prepared. Many new ideas and methods and annual cost figures were used in this study not before known to the local engineers. During the process of the work the head of the Fundamental Plan Department in New York came to advise and instruct in the preparation of the plan. In addition, the advice of the General Staff as a whole was available and freely given.

This plan showed that in general the conclusions reached in the previous study were correct, but owing to the later information on the tendencies of growth it made some changes in the location of future offices and also gave later forecasts as to their probable size. It was completed early in 1917 and is now being used as a guide for the future construction and building program.

Large sums have already been invested, largely based upon the indications of these fundamental plans and an expenditure of over $9,000,000 has been, or will be, made for plant in the Missouri and Kansas Company territory, whose location, amount and broad
898 characteristics have been determined by these fundamental plans. While it would be a very difficult matter to estimate accurately the probable loss which would occur in the course of time by not having an adequate fundamental plan, it is clear that a sav-

ing of even a small percentage of the expenditure mentioned above would be a substantial matter.

Transmission Study.

In connection with the first Kansas City fundamental plan, a transmission study for the city was made by the engineers of the General Staff in co-operation with the local engineers. Several engineers of the General Staff visited the local headquarters in connection with this study, which was a thorough one, and utilized data made available by the fundamental plan. As a result of this study it was demonstrated that it would be possible to extend further the use of fine wires in both trucks and subscribers' loops with the result that a material annual saving will be effected over what the cost would have been without the data derived from this particular study.

Buildings and Central Office Equipment.

During the past few years the Missouri and Kansas Company erected or made important extensions to many telephone buildings, and installed many new complete central office equipments or extensions to existing equipments. The General Engineering Staff has advised on much of this work. Frequent conferences were held between engineers representing the two companies.

899 The following is a list of the building and switchboard projects upon which the Engineers of the General Staff have worked for the Missouri and Kansas Company:

Telephone Buildings.

		Cost.
	Atchison	$15,000
	Chanute	7,000
	Coffeyville	10,000
	Hutchinson (Old)	8,000
	Hutchinson (New)	33,000
	Independence, Mo.	25,000
	Iola, Kansas	8,000
	Joplin, Mo.	22,000
	Kansas City (Main)	98,000
	Kansas City (Grand)	14,300
	Kansas City (East)	16,000
	Kansas City (South)	14,000
	Kansas City (Hiland)	15,000
	Kansas City (West)	9,000
	Kansas City (Wabash)	35,000
	Lawrence	11,000
	Leavenworth	11,000
	Parsons	14,700
	Pittsburg	8,300
	Salina	9,000
	Springfield	78,600
	St. Joseph, Mo. (Main)	28,000
	St. Joseph, Mo. (South)	5,000
	Topeka	10 000
900	Wichita (Old)	8,000
	Wichita (New)	207,000
	Total	$720,900
	Addition at St. Joseph	22,000
	Addition at Kansas City (Grand)	27,700
	Addition at Kansas City (East)	16,000
	Total Cost of Buildings, including additions	$781,600

Central Office Equipment.

	Cost.
Carrollton	
Wichita (old)	$16,000
Wichita (new)	51,000
Topeka (old)	280,000
St. Joseph (Main)	118,000
St. Joseph (South)	115,000
Kansas City (Main)	16,000
Kansas City (Grand)	140,000
Kansas City (East)	58,000
Kansas City (West)	35,000
Kansas City (Hiland)	37,000
Kansas City (Wabash)	20,000
Kansas City (Rosedale)	63,000
Sedalia	44,500
Joplin	47,000
Pittsburg	50,000
Harper	22,000
Ft. Scott	4,000
Olathe	18,000
Ottawa	3,000
Monett	4,000
901 Pleasant Hill	9,000
Newton	6,000
Arkansas City	13,000
Lawrence	20,000
Leavenworth	29,000
Hutchinson	30,000
Frontenac	18,000
Eureka	2,000
Coffeyville	6,000
Chanute	30,000
Leeds	20,000
Neodesha	2,500
Iola	5,000
Parsons	17,500
Salina	34,500
Winfield	30,000
Fairmount	11,000
Springfield	9,000
	106,000
Total Central Office Equipment	$1,538,000
Total Buildings and Central Office Equip't	$2,319,600

As will be seen from the foregoing, engineering advice and assistance has been given during recent years in regard to buildings and central office equipments aggregating in cost over $2,319,600.

Protection of Life and Property and Insurance.

The Insurance Department of the General Engineering Staff, working in co-operation with the Engineering Department, has inspected and made recommendations of the following build-
902 ings in the Missouri and Kansas Company territory. In addition 494 maintenance reports have been received and carefully considered and, where necessary, recommendations were made in regard to them.

Inspected in Year 1911.

Atchison, Kansas.
Hutchinson, Kansas.
Topeka, Kansas.
Wichita, Kansas (2).
Independence, Mo.
Joplin, Mo.
Kansas City, Kan. (West).
Kansas City, Mo. (Main).
Kansas City, Mo. (South).
Kansas City, Mo. (East).
Kansas City, Mo. (Grand).
Sedalia, Mo.
St. Joseph, Mo. (Main).
St. Joseph, Mo. (South).

Inspected in Year 1912.

Arkansas City, Kansas.
Atchison, Kansas.
Chanute, Kansas.
Coffeyville, Kansas.
Hutchinson, Kansas.
Iola, Kansas.
Lawrence, Kansas.
Leavenworth, Kansas.
Parsons, Kansas.
Pittsburg, Kansas.
Topeka, Kansas.
Salina, Kansas.
Kansas City, Mo. (Hiland).

903 Inspected in Year 1916.

Hutchinson, Kan.
Ft. Scott, Kan.
Independence, Mo.
Iola, Kan.
Arkansas City, Kan.
Atchison, Kan.
Springfield, Mo.
Topeka, Kan.
Sedalia, Mo.
Parsons, Kan.
Marshall, Mo.
St. Joseph, Mo. (Main).
St. Joseph, Mo. (South).
Coffeyville, Kan.
Pittsburg, Kan.
Caney, Kan.
Carrollton, Mo.
Chillicothe, Mo.
Chanute, Kan.
Lawrence, Kan.
Kansas City, Mo. (Hiland).
Kansas City, Mo. (Grand).
Kansas City, Mo. (East).
Kansas City, Mo. (South).
Kansas City, Mo. (Main).

In addition to the above engineering assistance on new projec
during the last few years hundreds of other engineering matte
relating to central office equipment and buildings have been studie
by the General Staff for and at the request of the Missouri an
Kansas Company, and engineering advice has been given on a

of these matters. Some idea of the importance and range of the subjects discussed will be obtained from the following list giving some typical cases:

On account of the large number of long lines connected with the private branch exchange in Kansas City, much difficulty was experienced with the operation of the circuits. At the request of the Missouri and Kansas Company, the American Telephone and Telegraph Company made a careful study of the situation
994 and designed a private branch exchange switchboard to overcome the difficulties.

As a result of trouble which has been experienced in the ventilating of some of the operating rooms in the Missouri and Kansas territory, the American Telephone and Telegraph Company gave specific advice regarding the heating and ventilating of telephone buildings and the location of fans in the operating rooms.

Gave specific advice as to the best method of lighting operating rooms and also a method of rear lighting for the switchboard.

Made an extensive study into the question of installing equipment in the Kansas City offices to provide a jack per station service.

Gave considerable advice and furnished circuits for Morse and private line equipment and for railway composite equipment.

Gave advice as to treatment of line relays, the armature pole pieces of which have become rusty due to dampness.

Gave specific advice regarding the various types of locks, especially those used in operators' quarters.

Gave advice in regard to adding the front panels of switchboard to overcome the noise of the cord weights striking the panels.

Gave specific advice in regard to treatment of the No. 1 storage battery at Kansas City Main. This battery had become sulphated and the American Telephone and Telegraph Company gave instructions to overcome this.

Tested sample of electrolyte manufactured by a local Kan-
905 sas City concern and gave comparisons with electrolyte made by other manufacturers. As result of these tests considerable economy was effected in the purchase of electrolyte.

Made a report on the Weber gas engine, which was manufactured near Kansas City, giving comparison of the results of tests made on this engine and engines of other manufacture.

Gave specific advice in connection with the type of central office equipment for operating prepayment coin service stations.

Gave specific advice and designed a circuit in connection with toll subscribers' loop to be used in Kansas City.

Gave specific advice in connection with making a circuit change on the test and plugging up line to increase the volume of tone.

Advised in regard to use of inclined designation strips on "B" boards.

Make specific recommendations as to proper material to use in polishing switchboard plugs and concerning portable polishing machines for this purpose.

Advised with reference to best location of peg count key.

Gave specific advice as to the results of wear permissible in No.

92 switchboard jacks, and advised regarding the sleeve gauges to be used in testing jacks.

Advised that as a result of a general investigation it was not considered that there would be any advantage in waxing steel cords, but rather that there would be a disadvantage because the waxing makes the cords very much stiffer and more difficult to handle.

906 Gave specific advice in regard to providing a switch so that the battery-driven ringing machine could be run off the No. 2 battery in order to provide sufficient discharge for this battery.

Gave specific advice on the question of installing tarpaulins for switchboards in small offices.

Advised concerning the practice of furnishing current for lighting purpose from the central office storage battery.

Forwarded a circuit for reverting busy test to be used on the board at Topeka, Kansas.

Advised regarding the installation of multiple answering jacks at some of the Kansas City offices.

Gave specific advice in several instances as to circuit modifications to adapt standard circuit to work under special local conditions.

Gave specific advice as to design of battery cabinet to be installed at private branch exchanges.

Furnished results of extended and elaborate tests as to relative efficiency of various makes of dry batteries.

Gave specific advice as to cost and life of operators' telephone cords, recommending most economical length of cord to meet average operating requirements.

Gave specific advice as to the best oil for use with gas engines.

Discussed in detail the advisability of providing a separate room for the gas engine, with non-combustible partitions, and pointed out the danger in connection with providing gas engines so that they could be arranged to operate with gasoline.

Gave specific advice regarding advisability of providing a cut-off on call wire keys to avoid necessity of operator closing listing key when using call wire.

907 Furnished a complete report regarding advantages and disadvantages of the Miniture telephone booth.

Described a new plug which had been developed for use for testing at the M. D. F.

Gave specific advice and drawings regarding a jack and plug connection for telephone connection to Pullman cars while at a station.

Gave advice in regard to the voltage range of battery-driven ringing machines.

Gave information relative to development work being done on a high-speed gas engine charging set.

Gave advice regarding the effect of high temperatures upon storage batteries.

Cord Circuits—Proposed a new circuit to overcome loss in transmission in rural cords when connected to ground.

Gave information regarding the position of the toll line and trunk cords on No. 1 toll switchboards.

Gave information regarding tools for the adjustment of No. 50 coin collectors.

Gave information relative to loaded call wire circuits.

Gave information regarding some of the electrical characteristics of the No. 37 repeating coils.

Gave advance information regarding the abandonment of high-resistance heat coils on toll and rural lines.

Commented on the advisability of standardizing a single No. 46-A repeating coil on a double base so that balancing resistances could be installed in the space ordinarily occupied by the other coils. This arrangement was to be used in connection with side circuits of phantoms where only one of the side circuits are termi-
908 nated. This information used in connection with our standard specification for the No. 41 wire test panel. The circular does not give any information other than was agreed with us that there was a demand for such a coil and they advised that they desired to give the matter further study before standardizing the same.

Gave information regarding service designations on No. 10-A message registers.

Gave information regarding a new peg count register keys.

Gave information regarding the use of the test box for new type of supervisor relay for adjusting No. 118 type relay.

Discussed arrangement of subscribers' multiple at local trunk positions. This question originated with the American Telephone and Telegraph Company.

Gave information regarding flashing recall for No. 1 switchboard.

Gave information regarding observations of individual "A" and "B" operators' work.

Commented on the advisability of using parts of No. 8 equipment which had been removed from service. Also gave transmission equivalent on circuits which we had submitted in a letter to them in connection with improving the transmission on No. 8 equipment, if re-used.

Suggested changes on ring down trunk circuit between toll operator's position and No. 5 chief operator's desk, which we submitted.

Trunk circuits—Gave information on circuit for multiple marking trunks.

909 Gave information regarding one-way, non-call circuit trunks for inter-office traffic.

Substation Equipment.

At the request of the Missouri and Kansas Company, the General Staff has, from time to time, studied and advised in regard to many matters of great importance concerning their substation equipment. Various specific difficulties encountered in Missouri and Kansas Co. have been carefully studied and advice has been given concerning them. Following is a short list of typical items of work of this sort:

Routine tests of dry battery cells and advice as to the most economical plans for making them.

The best type of dry cell to use for various purposes.

Information regarding telephone booths, including sound-proof features and methods for automatically closing an electric light circuit with the folding door booth.

Outside Plant Matters.

The files of the Engineering Department of the General Staff show that the Missouri and Kansas Company has requested advice from the General Staff in regard to very many specific matters relating to outside plant. Many of them have to do with the proper construction to employ to meet the peculiar conditions of a specific case. In other instances the question involved concerned the application of standard arrangements to conditions more or less general to the Missouri and Kansas territory, and in such cases information given in regard to a specific case also applied to
910 a considerable number of other similar cases. Below are given a few typical cases of advice in regard to outside plant matters given at the request of the Missouri and Kansas Company:

Gave specific advice with regard to the effect of varying amounts of dead timber in poles and the amount permissible in new poles.

Upon request of the Missouri & Kansas Company, gave specific advice relative to improving methods in use in reinforcing poles.

Upon request of the Missouri & Kansas Company furnished information regarding the value of a cement coating around the butt of poles as a means of preventing decay. Use of cement for this purpose shown to be ineffective.

Gave specific advice regarding the use of carbolineum in its application to pole butts.

Furnished complete information giving comparative results, costs, etc., with respect to using a patented zinc chloride process for treating pole butts. Report was not favorable to use of zinc chloride treatment.

Upon request of Missouri & Kansas Company, furnished complete information regarding most economical and effective treatment for fir cross-arms. This information covered use of preservative compounds, methods of applying carbolineum and paint and specification covering a durable cross-arm paint.

Furnished specific information and advice based on tests which they had carried on which would overcome difficulties the Missouri & Kansas Company was experiencing from the use of rock elm cross-arm pins.

Gave specific advice and information regarding the factors entering into the economical use of — cable plants.
911 Furnished specific advice regarding sizes of metal rings which should be used for supporting various sizes of cable.

Furnished specific information as to the size of sleeves best suited for use in splicing cable.

Upon request of the Missouri & Kansas Company, advised as to results which might be expected from the substitution of cotton sleeves for the paper sleeving generally in use.

Furnished information and advice regarding trouble the Missouri

& Kansas Company was experiencing with moisture penetrating the compound used in cable terminal pot heads. This resulted in the use of cable boxes having a sealed chamber cable terminal eliminating the use of pot heads.

Gave comparative cost figures and possible results to be expected from the use of No. 8 and No. 14 terminals resulting in final standardization of No. 14 terminals.

Gave specific advice based on data collected from other companies against the use of No. 19 gauge taps on 16 pair No. 14 terminals.

Upon request gave detailed information and advice regarding the use of a small distributing terminal in halls and corridors of office buildings. This was of great importance in furnishing service to large office buildings.

Furnished specific advice as to the possibility of placing underground conduit in the park space between sidewalks and curbs. Also suggested difficulties likely to be experienced in this type of construction. Recommended its use under suitable conditions.

912 Upon request of the Missouri & Kansas Company furnished information regarding the comparative advantages of oval vs. rectangular type manholes.

Gave specific advice as to the desirability of using ventilated manhole covers and recommended the use of a specific type of ventilated manhole cover.

Furnished detailed recommendation as to the practice of sealing ducts where the presence of gas leaks is suspected.

Gave specific information regarding the design of heavier manhole cable racks and hooks to prevent buckling and bending.

Gave specific advice in the results of tests made on samples of certain kinds of friction tape submitted by the Missouri & Kansas Company and advised the use of a satisfactory tape which could be obtained at 60% of the price the Missouri & Kansas Company had been paying.

Furnished at various times, upon request, much detailed information regarding conditions under which joint use of poles could be entered into with electric light companies.

Gave specific advice with regard to the sizes of bare copper wire for toll purposes which would give most economical results in the territory of the Missouri & Kansas Company.

Gave detailed information as to methods to be used in stringing drop wires to avoid injury to insulation from limbs of trees.

Furnished detailed information as to the type of tie wire which should be used for tying twisted pair copper clad steel wire to porcelain knobs.

913 Gave specific advice as to ring wiring construction on the outside of buildings which would be acceptable to the National Underwriters' Association.

In reply to inquiry advised Missouri & Kansas Company that arrangements had been made so that double groove insulators could be purchased as cheaply as the single groove insulators previously in use on certain types of lines.

Furnished specific information with regard to the use of porcelain insulators on important toll lines.

Advised regarding the type of test connector most suitable for use.

Gave specific advice regarding circuit to be used in coin collector installations which eliminated the difficulty which the Missouri & Kansas Company had been experiencing and the necessity of running return ground wires to such stations.

Furnished specific advice intended to eliminate the difficulty experienced due to installers and inspectors connecting up desk stands improperly.

At the request of the Missouri & Kansas Company took necessary action which resulted in improving the 5/16" porcelain tubes used in sub-station wiring work.

Furnished specific advice as to bending tests to be used on pole steps.

Furnished specific advice regarding a special rock anchor required in rocky soil.

Furnished detailed information as to size of guy strands necessary for supporting various size cable.

Gave special information regarding the advisability of using steel cross-arms to support aerial cables when several of them were attached to one pole line.

Replying to request of Missouri & Kansas Company advised
914 against the use of certain soldering paste for making connections in cable boxes because of the corroding effect of the zinc chloride contained in the paste.

Gave advice regarding dating nails as a means of identifying poles and other items of plant in maintenance and depreciation studies.

Furnished drawings and information regarding various suspension type insulators and other fittings, together with methods of dead ending steel wires and connecting steel and copper wires at river crossings.

Gave information regarding the complete development of small diameter cable for both aerial and underground use.

Found paper other than pure manila for wrapping cable pairs thus making a saving.

Developed new methods of measuring capacity in Duplex cable.

Outlined air pressure method of testing cables for defects in sheaths and joints of underground cable.

Gave information regarding development of small diameter composite cable.

Outlined use of treated wood face panels for use on No. 14 terminals replacing porcelain panels.

Outlined development of sealed chamber cable terminals and their standardization.

Outlined change in No. 14 terminals to avoid breaking of face panel.

Outlined specifications for second grade pine cross-arms.

Outlined specifications for fir cross-arms.

Outlined change in color codes on cross-connecting wire to save dyes.

915 Advised of improved methods of manufacturing duplex cable.

Outlined improvement in reducing couplings.

Explained mitred head bolts and thin-headed screws and recommended their use while there is a shortage of standard bolts and screws during the war. Due to the metal employed there is no loss of strength.

Transmitted new specification for galvanized duct shields.

Transmitted G. E. C. No. 652 on "Inductive Interference from Power Circuits."

Transmitted amendments to specifications on "Galvanized Pole Seats and Balconies."

Explained revised specifications on creosoted yellow pine poles with specifications.

Transmitted results showing the advantages of butt treating poles.

Explained method of making sleeve joints in copper wire with special reference to connections in old wire, with specifications.

Explained the use of tinned steel sleeves on steel or iron wire, with specifications.

Explained use and transmitted specifications for tinned copper sleeves for cable conductors.

Advised regarding development of spools (reels) for cross connecting wire.

Advised regarding the use of iron wire in power company circuits crossing telephone lines at Abilene, Kansas.

In addition to the above work outside plant engineers have visited Kansas City frequently, at which times they have discussed many matters relating to the outside plant and advice has been
916 given in regard to many questions of this sort. Also discussion of questions with advice has occurred during visits of the Missouri and Kansas Company's Engineers to New York.

Transmission and Protection.

On the subject of transmission and protection, many specific problems arising in the territory of the Missouri and Kansas Company have formed the subjects of requests for engineering advice and assistance from the General Engineering Staff. Under the heading "Transmission" we include all questions concerning the "loudness" and "clearness" of speech transmission. The general subject of protection has to do with the safeguards provided for the users of the telephone, the employes of the telephone company and the public against accidents due to electric shock and the prevention of fires in the telephone plant or elsewhere due to electrical causes. The electrical currents employed in telephone work are not such as to cause hazards to life or property, but proper protection must be provided against lightning and against accidental contact with light and power wires. Many questions in regard to transmission and protection have been considered by the General Staff for the Missouri and Kansas Company. A few cases cited below will illustrate these matters:

Experts of the Engineering Department of the General Staff have furnished a great deal of specific advice and information with regard to the loading of trunk cables in Kansas City. This advice covered every phase of the problem, such as specific coils to be used, proper spacing of coils, size of manholes, size of loading pots,
917 methods and material to be used in installation, etc.

Furnished specific information as to the comparative transmission efficiency of various types of cables under different conditions.

Furnished specific data as to reflection losses between loaded open wire circuits and non-loaded cable.

In January, 1911, a Missouri & Kansas representative spent a month in New York City, gathering information on the subject of transmission. The experts of the General Staff co-operated with him in every way, and placed at his disposal all their information and such of their time as was necessary to enable him to obtain a thorough, practical knowledge of the various phases of transmission work.

Furnished specific advice as to use of inequality coils in connection with a rearrangement of the Kansas City loaded trunk plant.

Gave detailed information as to changes advisable to improve transmission on associated press news telephone circuits of the Missouri & Kansas Company.

Gave specific advice in regard to the construction necessary at high-tension crossings involving various voltages on power circuits.

Gave specific advice as to the necessity of the use of grounded cross arms in connection with joint construction with electric light companies.

Furnished detailed information regarding the balancing of phantom circuits. This is essential to eliminate cross-talk.

Furnished detailed advice and comments on specifications prepared by Missouri & Kansas Company covering transpositions. As a result of these comments, certain modifications and changes
918 were made which improved the specifications.

Furnished specific advice as to transposition schemes which should be used on telephone circuits on pole lines also carrying telegraph circuits.

Furnished complete drawings and necessary information for repeater installations at the following offices of the Missouri & Kansas Company: Chanute, Wichita, Hutchinson, Salina, Springfield.

A representative of the Missouri & Kansas Company spent two weeks in New York in consultation with experts of the General Staff, obtaining a practical working knowledge of the features involved in connection with the use of repeaters. During this visit the experts of the General Staff gave him every assistance in securing the necessary information.

Furnished specific advice as to the method of fuse protection which should be used where long lines enter aerial cables.

Furnished specific advice as to what conditions of plant properly constituted exposed wiring, and the method that should be used for its protection.

Furnished specific advice as to the methods and apparatus to be used in testing the transmission efficiency of loaded cable.

Advised the Missouri & Kansas Company with regard to the purchase of a cross-talk meter, its design and manufacture.

Furnished the Missouri & Kansas Company with specially designed testing apparatus for the purpose of measuring the inductance and demagnetizing cable loading coils. This apparatus was used in Kansas City, and two experts from the General Staff were
919 sent to supervise the tests.

Furnished detailed advice on the subject of the design of a high frequency test set for use in testing transmission efficiency of circuits and the apparatus of which they are made up.

Furnished specific advice as to the design of an artificial cable box and the advisability of its use in the Missouri and Kansas territory.

Furnished the Missouri & Kansas Company with specific data regarding the liability of loading coils to magnetization and consequent loss of efficiency because of Morse current.

At the request of the Missouri & Kansas Company, furnished specific advice and made arrangements for the design of a single repeating coil mounted on a double base, to be used in balancing phantom circuits.

Furnished specific comments, advice and suggestions for the improvement of methods used by the Missouri & Kansas Company in eliminating the action of electrolysis on its plant.

Furnished specific advice as to the installation and fusing of electrolysis drainage wires.

Rendered very important and valuable services in connection with the preparation of contracts with electric light companies, for the joint use of pole lines.

Furnished specific data, advice and instructions as to the methods to be used in preparing a transmission study for Kansas City. The results of this study will be of great value to the Missouri & Kansas Company.

Furnished specific data, advice and instructions as to the methods to be used in preparing a toll switching trunk study for Kansas City.

920 Sent a representative of the engineering department to Kansas City to aid in eliminating the inductive interference encountered on subscribers' lines in the Hiland Office district.

Furnished detailed advice on the subject of inductive interference form power circuits and the design of transposition schemes to eliminate same. Several instruments for use in determining the amount of interference, its components, etc., have been designed and have been purchased by the Missouri and Kansas Company.

Furnished specific advice regarding transpositions to be used on phantom circuit between Harrisonville and Butler, Missouri.

From time to time complete information on the transmission efficiency of various types of circuits and apparatus has been supplied to the engineers of the Missouri and Kansas Company. These data have been of fundamental value in the design and construction of the telephone plant in Springfield and other parts of the

territory so as to obtain a satisfactory grade of transmission in the best and most economical manner.

Traffic Engineering and Operating Matters.

In connection with the specific buildings and central office equipments upon which the General Staff has worked and given advice to the Missouri & Kansas Company, many important traffic engineering problems, both toll and local, have been involved, and these have received careful attention from the General Staff. Inasmuch as there is a list of these buildings and equipments under a previous heading, it seems unnecessary to repeat the list here. Some
921 of the more important specific cases of traffic engineering and operating assistance rendered to the Missouri & Kansas Company by the General Staff are briefly described below.

At the request of the Missouri & Kansas Company for a period of about six years, experts of the General Staff visited the territory of the Missouri & Kansas Company and spent on an average, about three months a year studying the toll line system of the Missouri & Kansas Company, recommending additional circuits and changes in existing circuit layouts, and making toll routing and rate studies. Many questions were involved requiring a broader experience than the Missouri & Kansas Company possessed, and the work of the General Staff in this respect was of very great benefit. The most economical arrangement of toll operating centers, the best routing of toll calls, both from the standpoint of service and economy, were determined upon and substantial improvements in the toll service were effected.

The question of quoting toll rates was exhaustively studied and the experience of other companies, with various toll rate quoting systems, *were* drawn upon, and the most economical and satisfactory method of quoting toll rates known at the time was installed for the Missouri & Kansas Company.

In 1910 and 1911 a traffic expert from the General Staff spent about twelve months in the territory of the Missouri & Kansas Company, advising on matters of traffic organization, operating loads and efficiency, and a great deal of work was done which resulted in an improved grade of service.

In July, 1916, a study was started under the supervision
922 of a representative of the General Staff on a Toll Fundamental Plan for the Missouri & Kansas Territory. This study being the first of its kind to be made in this territory, required a considerable amount of supervision on the part of the General Staff, many months being required to complete a study of this nature.

At the request of the Missouri & Kansas Company, a representative of the General Staff, who had specialized in service observing and service observing equipment, spent some time in the territory of the Missouri & Kansas Company, going over with our traffic representatives and engineers questions pertaining to service observing equipment and the methods used for making tests and summarizing them, in order to give an exact and comprehensive picture of the grade of service being rendered. Observations and inspections of

telephone service are particularly intricate and require a high degree of skill on the part of the observers, and a considerable amount of special, carefully designed equipment in order that a true picture of the character of the service rendered can be obtained. The work of the General Staff along this line has been of very great benefit to the Missouri & Kansas Company and its patrons, in the way of improved service.

At the request of the Missouri & Kansas Company one of the representatives of the General Staff visited our territory and spent several days with our traffic representatives going over details of peg count equipment and methods of making peg counts, giving advice and information to our people in regard to many points upon which questions had arisen. The peg count, which is a record of the number of calls handled by the operators, is an ex-
923 tremely important record, as the amount of the investment in buildings and switchboards depends very largely upon it; likewise the number of operators required is determined by the number of calls handled, and so it will be seen that it is very important that this record be accurate and carefully checked. The difficulties in obtaining an accurate record are much greater than would seem to be the case on first consideration, and much valuable assistance has been rendered by the General Staff on this question.

Of the many other specific traffic engineering and operating problems in the solution of which the General Staff has assisted the Missouri and Kansas Company, the following is a partial list:

Discussed the advantages of various arrangements of supervisory lamp caps, and gave specific advice as to the color and arrangement which had proven most satisfactory.

Gave specific advice in regard to the treatment of rural calls in connection with peg counts.

Gave detailed information as to the best method of handling cut-offs in a multi-office city, and advised as to the use of special "B" supervisors' equipment used for the purpose of overcoming one of the principal difficulties.

Furnished advance copy of special forms and stationery required for making toll service observations at the request of the Missouri & Kansas Company, which was anxious to begin this work in Kansas City.

Advised relative to undesirability of using ringing lamps on A and B switchboards.

Recommended changes and improvements in recording
924 operator's cord circuits to obtain a disconnect signal when line operator secures the calling party's line.

Furnished specific advice regarding multiplying of toll line and trunks on chief operator's desk for service observation and checking purposes.

Advised relative to the uses of the instruction circuit in connection with handling local and toll traffic.

Furnished complete information and data regarding proper operating loads which could be satisfactory handled by operators of various degrees of experience.

Furnished specific information and advice regarding the effect upon operating loads with various numbers of unoccupied switchboard positions.

Advised relative to standard co-efficients for use in equating "leave word," "inward ring down" and "delayed switch" calls in connection with peg count records.

Furnished specific information relative to the arrangement and location of Toll Supervisor's stands.

Investigated and furnished advice relative to different types of toll ticket distributing systems.

Furnished information regarding the experience and conclusions in connection with the practice of repeating telephone numbers, with special reference to the use of the term "Double."

Furnished information relative to standard type of sub-station number plate, together with the best installation and maintenance practices in connection therewith.

Gave information relative to standard designations for party lines.

Furnished information regarding circuits and detailed de-
925 scription of method of operation of No. 4 Private Branch Exchange.

Furnished advice regarding the suggestion that manual ringing trunks be so wired that the "B" operator could not ring until the "A" operator had connected to the trunk.

Gave specific advice regarding the method of operation of certain special local trunks in connection with the excess multiple at Grand office, Kansas City, with special reference to the reverting busy test feature.

Patents.

A very large number of patents are owned by the American Telephone and Telegraph Company or controlled by it through its ownership of the American Bell Telephone Company and its contracts with the Western Electric Company. A list of these patents, over 2,600 in number, and held for the benefit of the associated companies, including the Missouri and Kansas Company, is attached hereto and made a part hereof and marked "Appendix H." In this list are found patents, the subject matter of many of which is of very great importance to the business, and groups of them taken together cover matters of vital consequence in the economy and efficiency of apparatus used by the associated companies. To go over this list and to point out the importance of the various groups of patents would require a complete discussion of all parts of the telephone system. A few specific cases, however, will be cited:

The Pupin patents themselves and other patents on the
926 work done by the general engineering staff to perfect the Pupin invention and develop it in a practical way are important.

The patent of Scribner, 669,710, covers the most efficient and economical form of sub-station apparatus and is the standard employed by the associated companies.

Another very important group of patents are Athearn, 940,654 and 940,655, and Barrett, 940,658, electrical conducting systems and a system for nullifying inductive disturbances. The subject matter of these patents provides a practical solution of a very serious telephone problem introduced by certain types of electrical railway working. The patents of Gundlach, 751,501, 762,820, and the patents of Shreeve, 701,655, 863,230, 897,028 and 937,189, together with applications now pending, cover work of very great consequence to the associated companies.

Apart from all the patents referred to above and not included in the list attached hereto there are several groups of patent applications which cover broadly and in detail the apparatus and the methods and systems and various kinds of connections required in improving the transmission of speech, so as to make it possible to talk with ease from Springfield and other points in Missouri to all parts of the United States including San Francisco, Los Angeles, San Diego and other points on the Pacific Coast, as well as to give good economical service throughout the territory in which they operate themselves. These patents and patent applications cover developments of the utmost importance to the Missouri and Kansas Company and the other associated companies, and the rights to use them and to
927 be protected in such use are granted to the associated companies as one of the services which they receive from the American Company.

There is another large group of these patents which covers ground which we must traverse in our prospective developments of switchboards and other important apparatus, and the possession of these patents gives us a free field in which to work out the very best system for the future needs of the associated companies. A very large number of the other patents cover important devices and methods of working and of construction. Some of these, considered by themselves, might not appear to be of controlling importance, but taken in connection with all of the others, they are essential to the economical working out of the system as a whole.

These patents cover telephone systems and apparatus of all kinds which are used by the associated companies and apply, not only to the most efficient methods and apparatus as viewed from the construction standpoint, but they also represent the most efficient apparatus and systems from the traffic standpoint, and also from the maintenance standpoint. That is, they represent systems which very greatly reduce not only the traffic costs, but also the maintenance costs.

But aside from all this, there is one point which should be borne in mind in judging of this list of patents. It is this: These patents cover the system which the associated companies are now using. Some of them cover methods which are to be used in the future. These latter, together with the patent applications, insure that an unrestricted field of development is thus kept open for all
928 the associated companies. The other patents insure the associated companies in the unmolested use of the system which they now have.

Too much importance cannot be attached to this point because any one out of hundreds of these patents, in hostile hands, might be made the basis of a successful suit against an associated company, such as the Missouri and Kansas Company, the result of which would be that most expensive reconstruction would have to be undertaken to remove the infringing item, to say nothing of the expense of defending such suits. Although this item in itself might not be large, yet its relation to the system as a whole would entail enormous reconstruction costs to remove it. The alternative to this, of course, would be the payment by the associated company of an immense sum in the form of tribute to the hostile owner of the infringed patent.

As rendering a uniform service of high standard throughout the country is what is being done by the associated companies, and as these high standards are obtained by the use of the arrangements covered by these patents, it is obvious that if they were all the exclusive property of one of the associated companies, they would not be available for the remainder, and that if part of them were the property of one associated company and part the property of another, and still another part the property of another associated company, and so on, it would be obvious that no one of them would have the best system. Accordingly, in order that each of the associated companies should have the benefit of the best arrangement in each kind of apparatus and system, it is necessary that these patents be held for the benefit of all alike, as is the case.

929 I will now mention certain other important services rendered to the associated companies by the Patent Department of the American Company. That department is prepared at all times to advise the associated companies in regard to patent matters so that costly and expensive patent litigation is avoided. The Patent Department takes the necessary steps to see that adequate patent protection is obtained on all new developments so that the associated companies may enjoy the free and unobstructed use of such developments. They study all proposed improvements in apparatus and methods so that the associated companies may not without proper patent right enter into the use of apparatus or methods as a result of which they might later have infringement suits brought against them and so suffer large losses.

Part of the work done by the Patent Department and the Engineers of the General Staff is the study, as issued, of each new patent dealing with telephony or applying thereto. Each year a very large number of such patents (from 500 to 1,000 or more) are issued in the United States. Each of these patents is carefully studied to determine whether or not it is of interest to the associated companies, either as covering something that they are now using, something that they would wish to use or something which might be of interest or value in connection with development work, either under way or prospective. If of present or prospective interest, the necessary rights are acquired.

While speaking of the Patent Department, I will mention one

case in particular which was defended by the American Com-
930 pany on behalf of the associated companies. It was a patent suit brought against one of the associated companies, but defended by the American Company. The suit was for alleged infringement of switchboards employed, not only at the central office, but at many subscribers' stations. If we had lost the suit, fully 75 per cent of the switchboards of all the associated companies would have had to be abandoned and replaced by those of an inferior type or the associated companies would have had to pay enormous tribute to the owners of the patent. The case was a hard-fought one from beginning to end, and to the very last the outcome was doubtful. The suit was finally won by the telephone company. Had it been lost, the Missouri and Kansas Company throughout all of its territory would have been hard hit, for whichever alternative they would have chosen in the event of losing, the expense would have been enormous.

As indicating the activities of the Patent Department on behalf of the associated companies, the following list taken from our records showing what was done in 1915 is given:

Patents issued	168
Applications filed	314
Applications pending at the end of 1915	436
Patents purchased	17
Applications purchased	6
Licenses obtained from other patentees	33
Infringement suits	4
Infringement alleged and litigation threatened	1
Interference proceedings in the U. S. Patent Office	49

931 The services rendered to the associated companies in connection with patents and patent matters which have been referred to above are of very great value to all of the associated companies. They are of such a nature, however, that it is difficult to assign a definite figure as representing their financial value. I have, therefore, not undertaken to do this, although I know that such a value would be very large.

Service of Other Departments of the General Staff.

I have thus far testified only in regard to the work of the engineering section of the General Staff, in regard to instrument services and in regard to patents and patent services and in regard to some of the work of the Insurance Department. Other service of different classes are rendered by the General Staff, consisting of services of the general administrative officials of the American Company—the president, the vice-presidents and the board of directors of the American Company; services rendered by the Legal Department of the American Company services rendered by the Comptroller's Department or Accounting Department of the American Company; services rendered by the Treasurer's Department of the American Company.

My work brings me in constant contact with the activities of these other departments, and from such contact I am sure that these

services are of very great value to the Associated Companies. They are, however, of such a character that it is difficult to place a definite financial value upon them, although such value is, in my judgment, very large.

In connection with the services of these departments of the
932 General Staff, there is one case that I will mention briefly.

This is a case of which the General Engineering Staff put in a great deal of work in connection with the Legal Department. It illustrates one of the legal and engineering activities in connection with the matter of protecting the interests of the Associated Companies in the matter of high-tension wires. At Lincoln, Illinois, an electric traction company built a 33,000-volt power transmission line in dangerous proximity to a telephone pole line carrying twelve wires of the Associated Company and four wires of the American Company.

This act of the traction company created a serious hazard to the property of the Associated Company and to the lives of its employes and the public, as well as to the property and lives of the employes of the American Company. Legal proceedings were begun in the name of the American Company and conducted without expense to the Associated Company, with a view to obtaining a decision from the Court removing the danger created by the traction company. This case during a period of more than three years involved a great deal of work not only on the part of the Legal Department of the American Company, but also on the part of the General Engineering Staff of the American Company, and a number of specially engaged outside engineering experts.

The legal and physical questions involved were unusual and this case was conducted knowing that it was a test case and that a favorable decision being obtained by the telephone company would have very great value throughout the territory of the whole United States where these high-tension troubles were becoming acute.

933 A favorable decision was obtained from the Court and the danger removed. All of this was done without any expense whatever to the Associated Company and the decision is one of very great consequence and advantage to all of them.

Instrument Services.

Another service rendered by the American Company is furnishing the Missouri and Kansas Company all of the transmitters, receivers and associated induction coils required by that Company for giving telephone service, and repairing and maintaining these instruments.

The average number of stations in service in the territory of the Missouri and Kansas Company for the year 1916, as shown by the records, was 142,853. The average number of transmitters and receivers in the hands of the Missouri and Kansas Company in 1916 was 313,690. A transmitter and receiver together with the associated induction coil constitute a set, which is the unit hereinafter employed. Of these sets the average number in use for 1916 was there-

fore 156,845. A reserve stock of instruments is maintained by the American Company for the benefit of the Associated Companies, to insure a continuous supply of instruments in the event of fire or flood losses, or stoppage of manufacture by fire, strikes or shortage of materials, or of abnormal demand due to rapid growth. This reserve stock has averaged more than 6 per cent. If the Missouri and Kansas Company purchased their instruments, in order to have the same guarantee of continuous supply, it would be obliged
934 to maintain a reserve of its own greater than 6 per cent of the number of instruments in use. Assuming, however, a reserve of only 6 per cent they must buy 9,410 additional sets, making in all 166,255 sets.

The regular sets of the type referred to sold in competition in the open market up to early in 1916 for $3.19 per set. The instruments for use at central offices and private branch exchange switchboards are of a more expensive type. Making allowance for the number of these more expensive sets brings the average market price up to $3.22 per set on the basis of the price prevailing in the open market during 1916. The price prevailing since early in 1916 and the present prices are substantially higher than these prices. But, assuming for the purpose of this case, that the Missouri and Kansas Company might be able to buy these sets in quantities at a price of $3.19 each the cost of 166,255 sets would be a total of $530,353.

The following items represent fair figures for computing the annual charges:

Repairs.

The total number of instruments returned by the Missouri and Kansas Company for the year 1916, as shown by the records was 43,545. On account of the fact that part of these instruments were handled and repaired at a point where other instruments were also repaired, and because after the instruments had been repaired they were not kept separate from other instruments returned, it is impossible from the books to arrive directly at the repair costs of instruments returned by the Missouri and Kansas Company.
935 The following estimate of such repairs is, however, trustworthy: For the country as a whole 58 per cent of the instruments returned in 1916 were repaired. On this basis the number of instrument repairs made for the Missouri and Kansas Company in 1916 was 25,256. The average cost of the instrument repairs including transportation and handling charges, and also small parts furnished, was 38.4 cents, making the cost on 25,256 repaired instruments for the Missouri and Kansas Company $9,698. These figures for repairs do not cover or include any instruments returned requiring complete reconstruction or instruments which are junked when returned, such cases being provided for by depreciation.

Depreciation.

Depreciation is taken at 10 per cent. This figure is based upon our actual experience with these instruments. This item takes care

of instruments which are junked when returned and those which come back in such condition that they must be completely reconstructed, utilizing, when available, some of the old parts. In figuring this item no instruments are included which are taken care of under the repair item mentioned above, and due allowance is made for the junk value of instruments which are not repaired and for such parts as can be used again.

Administration.

To allow for the administration expenses and general overhead charges in connection with the handling of instruments, an item of 1 per cent is included.

936 Return on Investment and Reserves.

To allow for return on the investment an item of 8 per cent is inserted and 2 per cent for reserves for contingencies.

The percentages given above amount to the following:

Depreciation	10 per cent.
Administration	1 per cent.
Return on Investment	8 per cent.
Reserve for contingencies	2 per cent.
Total	21 per cent.

Taking this percentage, 21 per cent, of the first cost of instruments, $530,353, as given above gives a

Total of	$111,373
Adding to this repairs	9,698
Gives an appraised value instrument services for the Missouri and Kansas Company for 1916	$121,071

The average number of subscriber's stations in service in the Missouri and Kansas Company in 1916 was 142,853. The average annual cost per station was, therefore, 84.9 cents.

The above estimate is made on the basis of $3.19 for the cost of the set. Since early in 1916 the price has been increased to $3.60 in 1916 and to $4.62½ in the early part of 1917. The present competitive sales price of a set is $4.35 made up as follows:

937

Receiver	$1.45
Transmitter	2.00
Induction Coil	.90
	$4.35

On the basis of the present price the annual cost would be increased from 84.9 cents to $1.13.

Evaluated Savings—Summary.

In return for all the services referred to above, the American Company receives from the Missouri and Kansas Company 4½ per cent of certain of the gross revenues of the Southwestern Company. For the year 1916 the records show that this amounted to $225,482. This is equivalent to a payment of $1.58 per subscriber's station. For Springfield the corresponding total amount was $7,154.59 and the amount per station, $1.03. The value of the instrument services rendered by the American Company in furnishing, repairing and maintaining the transmitter, receivers and associated induction coils required by the Missouri& Kansas Company to carry on its buisness has been conservatively appraised at 85 cents per station. Deducting the value of this service from the total 4½ per cent payment leaves the sum of 73 cents per station for the Missouri & Kansas Company as a whole and $1,291 or 18 cents per station for the city of Springfield as the amount paid for all other services.

Some of these other services have been described herein, although very briefly considering the magnitude of the transactions involved. Each has resulted in great pecuniary savings or other advan-
938 tage to the Missouri & Kansas Company. A few of the annual savings on charges against operating revenue for 1916 which have been definitely appraised herein are tabulated as follows:

	M. & K. Co.	Springfield.
Improvement in cable	$256,800	$23,600
Duct Saving because of cable improvement	30,200	2,400
New alloy for cable sheathe	3,500	1,100
Phantom Circuits	273,400	.....
Loading Cables (actual basis)	20,900	.....
Loading Open Wire (actual basis)	36,400	.....
Improvement in Switchboard Cords	24,800	1,500
Improvement in Efficiency of Toll Plant	19,000	.....
Improved toll operating methods and equipment	65,000	2,000
Total Evaluated Savings 1916	$730,000	$30,000
Average number of stations 1916	142,853	6,906
Total Evaluated Savings per stations	5.11	4.43
4½ per cent payment per station for service other than instrument service	.73	.18

It should be noted that the foregoing table gives the value of only those few items which have been definitely appraised and that no figures whatsoever are given for many of the very important
939 services which have been described, and that no appraisal has been attempted of the long list of more than 700 different

engineering subjects which have been completed during the past seven years for the Missouri and Kansas Company and the other Associated Companies and which are given in Appendix E.

Nothing has been set down in the table to show the value to the Missouri and Kansas Company of the 400 Engineering subjects which the General Staff has now in hand for the benefit of the Missouri and Kansas and the other Associated Companies.

Nothing has been put down to indicate in figures the value of the services of the Legal Department, the services of the Patent Department and the value of the patent protection, or the services of the Comptroller's Department or the services of the Insurance Department.

Nothing has been put down for the services of the Financial and Administrative Departments and the President and Vice-Presidents of the American Company.

There is no doubt that even the most moderate estimate of the value of all these services to the Missouri and Kansas Company would greatly increase the figure of over $700,000 given above.

The definite figures given above have been prepared in the cases cited not with the expectation that they would furnish the sole or principal measure of the value of the services rendered, but rather that they would serve as far as possible as a guide to the Commission in its comprehensive consideration of the value of the services as a whole. While the figure of $4.50 per station is a moderate one and represents only a small part of the total services rendered
940 to the Missouri and Kansas Company, yet it could be divided by 6 and still be larger than the payment which is made for services other than that of supplying, repairing and maintaining instruments.

It is not by these figures alone that the total value of the services may be determined, but taking them in connection with the description of the services rendered, and having in mind all of the circumstances of the case which have been related herein, it is possible to judge of the magnitude and capabilities and value of this organization which is, at all times, working for the Missouri and Kansas Company and for Springfield, and one can also get some idea of the vast resources which are concentrated upon the telephone problems of that company.

With the continued growth of Springfield and the other parts of the territory of the Missouri and Kansas Company, the telephone system of the Missouri and Kansas Company will increase not only in size but also in complexity. New problems of many kinds must inevitably arise in giving service to the public. A large number of new projects are receiving careful consideration at the present time. New scientific discoveries must be applied to the plant and apparatus in a manner so calculated as to produce the best service. It is, therefore, clear that the services which the General Staff performs for the Missouri and Kansas Company will increase from year to year in the future as has been the case in the past.

The foregoing is, I believe, sufficient to warrant the statement that for the City of Springfield, and for the Missouri and Kansas Com-

pany as a whole, it is stating the results of the above analysis
941 of the service rendered and the appraised thereof with fairness and moderation to say that for the payment made, the Missouri and Kansas Company and the City of Springfield receive in return each year from the American Company more than full value in the form of services rendered.

List of Appendices.

The several appendices referred to in the statement have been introduced as exhibits in this case. The following table shows the exhibit numbers.

Appendix.	Exhibit No.	
A.	.....	Chart showing services under License contract.
B.	.....	Diagram of General Engineering Staff American Telephone and Telegraph Company.
C.	.....	Diagram of Engineering Staff of Western Electric Company.
D.	.....	Typical specifications and handbooks.
E.	.....	Partial List of work completed.
F.	.....	Partial list of work on hand.
G.	.....	Partial list of Engineering Bulletins and Specifications.
H.	.....	List of unexpired Patents.

942 (*d*) The Expenses Incident to a Strike of the Southwestern Company's Employees in the Spring of 1919, Amounting to $250,000.00, Were Not Included in Any of the Southwestern Company's Statements of Revenues and Expenses.

This item of expense was satisfactorily taken care of by the Commission by amortizing the same over a five year period and charging $50,000.00 to the operating expenses of each year.

6. The Commission's Additional Abstract of the Record in Full:

943 "Com. Bean: What was the relation of the stock ownership between the Missouri & Kansas Company and the American Telephone & Telegraph Company?

"A. The American Telephone & Telegraph Company controls the stock of the Missouri & Kansas Telephone Company, which is now the Southwestern Bell Telephone Company, whether by direct ownership or ownership through another company I am not certain.

Questions by Commissioner Bean:

"Q. It also controls the Company at St. Louis?

"A. The company at St. Louis is now part of the Southwestern.

"Q. I know, but before the merger, before the consolidation, the same relation as to the stock?

"A. Yes, sir.

"Q. During the time that the subsidiary companies did not earn a full rate of dividend what rate of dividend did the parent company earn; can you state?

"A. I don't know what rate of dividend they earned. You mean by the 'parent company' American Telephone & Telegraph Company?

"Q. Yes sir.

"A. It was paying and has paid for some years 8 per cent on its stock.

"Q. Now was the contract with the Government contemplated that they should have a return separate and apart from the return to the subsidiary companies?

944 "A. No sir.

"Q. It is not?

"A. No sir; that is not my understanding of it.

"Q. Can you give me some idea of the physical property, as to toll lines owned by the parent company in Missouri?

"A. As to the physical valuation?

"Q. Yes sir; the extent of the physical property owned.

"A. No sir, I could not.

"Q. Well have they considerable lines in Missouri?

"A. Why they have lines transversing the State east and west, I think that is two routes, and running north and south through the State, and diagonally through the State, other lines. I couldn't really give you any idea as to the physical value.

"Q. On what basis do you use your line for the business of the Southwestern Bell Company?

"A. I don't believe I understand.

"Q. What do you get out of the business that goes over the line of the A. T. & T.; what do you get out of it, what per cent?

"A. We get a commission.

"Q. What is that commission?

"A. I believe it is 15 per cent and not to exceed 20 cents on any one message.

"Q. How long has that rate been in force?

"A. For sometime, some years.

"Q. Was that increased in your efforts to get more revenue?

945 "A. Well it was increased of course by the fact—that is our revenue from that source was increased from the fact that the uniform toll rates——

"Q. That there was a larger business, that percentage was figured?

"A. Yes sir.

"Q. Now what do the local exchanges get for toll messages that go over the line of the Southwestern Bell Company?

"A. They get 25 per cent.

"Q. Twenty-five per cent of outbound business?

"A. Yes sir; and I am speaking of outbound business in the case of the A. T. & T.

"Q. It is a fact your company would prefer not to own local exchanges in small towns at all, isn't it?

"A. I hardly think so.

"Q. Didn't you have that policy in Missouri for years, and in order to gather up the business of long distance lines you were compelled to go back into the local field?

"A. That has never been the policy since I have been connected with it.

"Q. How long have you been with the present company?

"A. Since sometime in 1916.

"Q. Can you state what this precentage of division is based upon, this 25 per cent of out-going messages?

"A. Please state that again.

"Q. That is a fair compensation for gathering up business, what is it based on, is there any scientific analysis?

946 "A. Yes sir; it was a basis reached—in the early days contracts were made with companies operating local exchanges, there was no uniform basis for that percentage; some of them were made 10 per cent and some 15 per cent and some of them at 20 and some 25 and some 30 I presume, and in the course of time 25 per cent sort of became a standardized figure generally accepted as a fair compensation to the local company for the work it did in connection with toll messages.

"Q. Are you prepared to say that should not be increased under the conditions?

"A. I haven't given it any study.

"Q. That was had with the old rate cases; they have never been satisfied that that is a proper division to go into the smaller town and gather up the business, the toll business, which I gather is the basis of the business, that is, the A. T. & T. business, and I have never seen any satisfactory analysis of it, and if you will make one I would like to have you present it.

Mr. Gleed: Giving your connecting companies, Mr. Hale, 35, 40 and 50 per cent that means just that much more expense to you in conducting your business?

"A. It means that much reduction.

Questions by Mr. Gleed:

"And would you require higher through rates and higher local rates to meet that additional expense?

"A. Of course, you must realize that the connecting companies, these small companies, are sharing in the increase in toll
947 rates through the fact that they get 25 per cent higher base. There is another point that I might make clear: There is a different percentage in connection with the A. T. & T. business and with our business; that is due to this: The cost to the terminal company, the work which they do in originating these messages, handling them, etc., is measured by the number of messages. So that the real consideration is the amount per message you get, not your percentage. The A. T. & T. message is a longer haul message,

a higher basis, and fifteen per cent of that amounts to more per message than twenty-five per cent of the Southwestern Bell tolls, as a general proposition. I should also say that we pass on to the connecting company the A. T. & T. rate to us. In other words, where a small connecting company originates the A. T. & T. message they get the commission paid by the A. T. & T.

"Commissioner Bean: In your toll business, keeping accounts, how do you divide between the state and interstate business, and charge them up?

"A. We don't divide between the states where the property in two states is owned by the same company. Where it is owned as it is in the State of Iowa by a different company that settlement is made on a pro rata mileage.

"Q. How is it made in these exhibits? Do you know how Mr. Scott made it, about the Missouri toll business?

"A. In the case where the property is owned by different
948 companies it is made as to the settlement with those companies on the pro rata mileage basis. In the case where the property is owned by the Southwestern Bell Telephone Company it is my understanding that the revenue originating in Missouri has been credited to Missouri.

"Q. How about the expense? All the expense in Missouri.

"A. All the expense, that goes with that——

"Q. You get no revenue from inbound messages? Just outbound?

"A. No. They get all the revenue from inbound, and charge up all the expense.

"Q. How does the business outbound compare with the business inbound? Have you any figures?

"A. No, but I believe the outbound is rather in excess of the inbound business.

"Q. Is that from experience, that rule, or just an arbitrary method of apportionment of costs?

"A. That is rather an arbitrary method of apportionment of costs. It is all one company, and there has been no attempt made, where the property is owned by the same company——

"Q. Of course it would be important for rate-making purposes.

"A. If there is any considerable balance one way or the other, yes."

949 *Table Showing the Rates Charged by the Bell Telephone Company at the Time the Federal Government Took Over Its Lines, the Rates Established by the Government, and the Rates Fixed by the Commission in Its Order of November* 26, 1919.

		Old rate.	Government rate.	New rate.
Armstrong	Bus.	$1.50	$2.50	$2.00
	Res.	1.25	1.50	1.50
Aurora	Bus.	3.00	3.00	3.00
	Res.	2.00	2.00	2.00

		Old rate.	Government rate.	New rate.
Benton	Bus.	2.00	2.50	2.25
	Res.	1.50	1.50	1.50
Bismarck	Bus.	2.00	2.50	2.25
	Res.	1.00	1.50	1.25
Bloomfield	Bus.	2.25	2.50	2.25
	Res.	1.25	1.50	1.25
Blue Springs	Bus.	1.75	2.50	2.25
	Res.	1.25	1.50	1.50
Brookfield	Bus.	2.50	3.50	3.00
	Res.	1.50	2.00	2.00
Campbell	Bus.	2.25	2.75	2.50
	Res.	1.25	1.75	1.50
Carrolton	Bus.	2.50	3.50	2.75
	Res.	1.25	2.00	1.75
Caruthersville	Bus.	2.50	2.75	2.75
	Res.	1.50	1.75	1.75
Chaffee	Bus.	2.00	2.50	2.50
	Res.	1.50	1.50	1.50
Chillicothe	Bus.	2.50	4.00	3.25
	Res.	1.50	2.00	2.00
Clarkton	Bus.	2.00	2.50	2.25
	Res.	1.50	1.50	1.50
Clayton	Bus.	3.00	3.50	3.25
	Res.	2.00	2.00	2.00
Dexter	Bus.	2.25	2.75	2.50
	Res.	1.25	1.75	1.50
East Prairie	Bus.	2.25	2.50	2.25
	Res.	1.25	1.50	1.25
Essex	Bus.	2.25	2.50	2.25
	Res.	1.50	1.50	1.50
Eureka	Bus.	2.00	2.50	2.25
	Res.	1.50	1.50	1.50
Fayette	Bus.	$2.50	$2.75	$2.75
	Res.	1.50	1.75	1.75
Ferguson	Bus.	3.00	3.00	3.00
	Res.	2.00	2.00	2.00
Glasgow	Bus.	2.00	2.75	2.50
	Res.	1.25	1.75	1.50

		Old rate.	Government rate.	New rate.
Glenwood	Bus.	1.25	2.00	2.00
	Res.	1.00	1.50	1.50
Grain Valley	Bus.	1.50	2.50	2.00
	Res.	1.00	1.50	1.50
Greenwood	Bus.	2.50	2.50	2.50
	Res.	1.50	1.50	1.50
Hayti	Bus.	2.00	2.50	2.25
	Res.	1.25	1.50	1.25
Hannibal	Bus.	3.00	4.50	4.00
	Res.	2.00	2.50	2.25
Higbee	Bus.	2.00	2.50	2.25
	Res.	1.00	1.50	1.25
Hornersville	Bus.	2.00	2.50	2.25
	Res.	1.00	1.50	1.25
Kirksville	Bus.	3.50	3.50	3.50
	Res.	2.00	2.00	2.00
Lamar	Bus.	2.00	2.50	2.50
	Res.	1.00	1.50	1.50
Lancaster	Bus.	2.00	2.00	2.00
	Res.	1.50	1.50	1.50
Lees Summit	Bus.	2.00	3.00	2.50
	Res.	1.50	2.00	1.75
2-party	Res.	1.00	1.50	1.25
951				
Lilbourne	Bus.	2.00	2.50	2.25
	Res.	1.50	1.50	1.50
Malden	Bus.	2.50	2.75	2.75
	Res.	1.50	1.75	1.75
Marceline	Bus.	1.50	2.75	2.50
	Res.	1.00	1.75	1.50
2-party	Res.	....	1.50	1.25
Marionville	Bus.	1.50	2.50	2.50
	Res.	1.00	1.50	1.50
Marshall	Bus.	2.50	3.50	3.00
	Res.	1.50	2.00	2.00
2-party	Res.	....	1.75	1.75
Mexico	Bus.	2.50	3.00	3.00
	Res.	1.50	2.00	2.00
2-party	Res.	1.25	1.75	1.75

		Old rate.	Government rate.	New rate.
Moberly	Bus.	3.00	4.00	3.50
	Res.	$1.75	$2.25	$2.00
2-party	Res.	1.50	2.00	1.75
Monett	Bus.	2.50	3.00	3.00
	Res.	1.50	2.00	2.00
2-party	Res.	....	1.75	1.75
Neosho	Bus.	2.50	3.00	3.00
	Res.	1.75	2.00	2.00
2-party	Res.	1.50	1.75	1.75
Noel	Bus.	1.50	2.50	2.00
	Res.	1.00	1.50	1.50
Oran	Bus.	2.00	2.50	2.25
	Res.	1.50	1.50	1.50
Pierce City	Bus.	2.00	2.50	2.50
	Res.	1.00	1.50	1.50
Poplar Bluff	Bus.	3.00	4.00	3.25
	Res.	1.50	2.00	2.00
2-party	Res.	....	1.75	....
Portageville	Bus.	2.50	2.50	2.50
	Res.	1.50	1.50	1.50
952				
Republic	Bus.	1.50	2.00	2.00
	Res.	1.00	1.25	1.25
St. Clair	Bus.	2.00	2.50	2.25
	Res.	1.00	1.50	1.50
St. Joseph	Bus.	5.00	6.50	6.00
	Res.	2.50	3.00	3.00
2-party	Bus.	4.00	5.00	4.75
2-party	Res.	2.00	2.50	2.50
St. Louis, flat rate	Bus.	8.00	9.00	8.50
	Res.	4.00	4.00	4.00
2-party	Res.	3.00	3.25	3.25
Message Rates.				
	Bus.	3.75	4.00	4.00
2-party	Bus.	3.25	3.50	3.50
Sedalia	Bus.	3.00	4.00	3.50
2-party	Bus.	2.50	3.50	3.00
	Res.	1.75	2.00	2.00
2-party	Res.	1.50	1.75	1.75

		Old rate.	Government rate.	New rate.
Senath	Bus.	2.00	2.50	2.25
	Res.	1.00	1.50	1.25
Sikeston	Bus.	2.50	3.50	3.00
	Res.	1.50	2.00	2.00
2-party	Res.	....	1.75	1.75
Slater	Bus.	2.25	2.75	2.75
	Res.	1.25	1.75	1.75
Smithville	Bus.	2.00	2.50	2.25
	Res.	1.50	1.75	1.50
Southwest City	Bus.	2.00	2.50	2.00
	Res.	1.50	1.50	1.50
Springfield	Bus.	4.00	5.50	5.00
2-party	Bus.	....	4.00	4.00
	Res.	2.25	2.50	2.50
2-party	Res.	1.75	2.25	2.25
Stanberry	Bus.	2.00	2.75	2.50
	Res.	1.50	1.75	1.75
Trenton	Bus.	2.50	3.50	3.00
	Res.	1.50	2.00	2.00
Washburn	Bus.	2.00	2.50	2.00
	Res.	1.00	1.50	1.50
Webster Groves	Bus.	4.00	4.50	4.25
2-party	Bus.	3.50	4.00	3.75
2-party	Res.	2.00	2.25	2.25
Wentworth	Bus.	2.00	2.50	2.00
	Res.	1.00	1.50	1.50

953 7. Fair Return:

Mr. Frank P. Hays, an investment banker of St. Louis, Missouri, testified that for 15 years he owned and operated country banks in Missouri and for 19 subsequent years he first had charge of the investment department of the St. Louis Union Trust Company and afterwards engaged in the business of buying stocks and bonds as an investment banker. He has had wide experience in financing telephone and other companies in various cities. He helped finance the Kinloch Telephone Company, a company operating local and long distance properties in Missouri, Illinois and Kansas; the Home Telephone Company of Kansas City, a company operating local and long distance properties in Missouri and Kansas; the Home Telephone Company of Lincoln, Kansas; the Home Telephone Company of Joplin, Missouri, a company operating local and long distance properties in the State of Missouri; the Home Telephone Company of

St. Joseph, Missouri, a company operating local and long distance properties in Missouri; and the Public Service Company of Western Kentucky. He is familiar with various kinds of public utility businesses in Missouri, Kansas, and Nebraska and Illinois and has had 35 years' experience in selling the stocks and bonds of public utility companies.

Mr. Hays testified:

"In stating what can be done and what cannot be done in the way of placing telephone stocks and bonds, I assume of course that in all cases the truth is to be told to the investor. A certain per cent of gold bricks always have been worked off every year, and always will be. In order to make salable telephone securities in my territory the intelligent investing public will have to be convinced of the following things:

First. That the principal sum invested is going to be protected. This means that proper and ample and safe reserves are to be
954 made with which to replace plant when it is worn out, and that rates to provide such reserves are going to be allowed; and that the concerns are going to be so managed and financed and treated that the additional capital, needed from time to time, can be secured, so that the enterprise will not be hampered for lack of capital;

Second. That the rate-making bodies are going to allow sufficient maximum rates to secure besides replacement reserves reasonable average annual returns. There are serious difficulties in so arranging rate schedules as to secure reasonable average annual returns; rates fixed this year are fixed on the conditions and experience of last year, or the year before. But the conditions change. Costs of labor and material may be very much higher next year than they are this. Large additional investments may have to be made next year which were not taken into consideration in fixing the rate. A rate which would have been sufficient last year may be insufficient next year, entailing a serious loss next year. Unfortunately Commissions do not, and probably cannot, act quickly in these matters. A net earning made last year may be turned into a net loss this year, through changes in conditions, cost of material and labor, additional investments, hard times, or other causes; and before the Commission can get around to adjust rates for the new conditions, several years of loss will have gone by. Before a normal flow of capital into utility enterprises, especially telephone enterprises, can be secured, the investing public will have to be satisfied that the mixiumum rates allowed by the Commission are going to be sufficiently liberal to secure an adequate average return; i. e., a reasonable dividend each and every year. It is my opinion that from the time State Commissions begin to control the rate of return, they should assume the responsibility of seeing that the fair net income allowed should be continuous, and adjust rates accordingly as soon as it is practicable to hear the case, thus assuring the average return allowed;

Third. Before the intelligent investing public will buy the securities of telephone companies situated in my territory they will have to be convinced not only that Commissions are going to allow sufficient rates to provide for good average returns, and to provide for adequate reserves, and not only that conditions are going to be such as to insure the proper annual increase of capital, but in each case they must be convinced that the commercial and political conditions are going to be such as to permit the company to earn a proper reserve and a proper return. The telephone companies are subject to commercial laws as well as to State statutes and
955 Commission rulings. There are some communities which are not able to support first-class telephone service, and other communities which will not do it at present. In the past, owing to ignorance and the newness of the business, many exchanges have been established in my territory upon rates which were unremunerative, and the public has been educated to believe that first-class service could be rendered at rates which are, as a matter of fact, not compensatory. There has also been a good deal of hostility and prejudice engendered against telephone and other utility companies. All telephones are not by any means a necessity. People can't be compelled to take them by law. This state of public sentiment and public misinformation is a condition which would make the outlook for telephone earnings in what I call my territory rather bad, even if there were no rate regulating laws.

The telephone business in my territory is a business involving very serious hazards and risks, and considering its hazards and risks, a fair rate of return in my judgment would be not less than 10 per cent per annum upon telephone investments.

I have said that a fair rate of return to be allowed by a commission on telephone property was not less than 10 per cent. I do not mean to be understood as saying that I think such an allowance in my territory at this time would be sufficient to attract the capital needed for telephone development. I do not think it would. But possibly such an allowance steadily and consistently made and accompanied by liberal treatment in the matter of valuation, would in the course of five or ten years cause the investing public to look upon such securities more favorably.

It must be remembered that most of the telephone enterprises in my territory have proven failures as money-making ventures. The Kinloch and the Kansas City Home may be cited as exceptions, but the bonds of even those companies are selling below par, and those companies cannot be said to have proven out absolutely as yet. As a matter of fact, I do not believe they have adequate replacement reserve on hand. But very many smaller companies have not proven successful. Some are paying no dividends at all, and others are paying small dividends out of earnings that should be reserved for depreciation.

There was no evidence introduced before the Commission to contradict the testimony of Mr. Hays.

8. Service Connection, Installation, Move and Change of Name Charges:

These charges produced approximately $118,000.00 per year in gross revenues, which amount is included in the gross revenue
956 figures presented in this case. The Commission condemned these charges on the ground that they were unlawful. The Supreme Court of Missouri reversed the Commission in this particular and held the charges lawful.

These charges are still being collected under orders of the Circuit Court of Cole County and the Missouri Supreme Court pending the determination of this writ of error by this Court and are being deposited in a bank at Jefferson City at 2% interest under a $200,000.00 surety bond.

9. The Commission's Decision in the Old St. Louis Rate Case:

On June 19, 1915, the Commission rendered an opinion in the old St. Louis rate case to which it refers in its opinion in this case. This decision is still pending on a motion for rehearing. The Commission's opinion is as follows:

957 *Opinion.*

The Southwestern Telegraph and Telephone Company of Missouri (hereinafter referred to as the Company) on the 2nd day of December, 1913, filed with this Commission a schedule of increased rates to certain subscribers for service on its St. Louis exchange, to become effective January 1, 1914.

I.

Valuation.

Two well-recognized methods of determining present value of the property of a public utility were adopted in this case: (1) Original cost to date and (2) Cost of reproduction new less depreciation, as estimated by the engineers of the Commission and the Company. We shall consider them in the order stated.

II.

Original Cost.

Mr. Wass, General Auditor of the Company, and Mr. McShane, Chief Accountant of this Commission, made an audit of the Company's books and submitted reports thereof, which were filed and introduced in evidence. Each accountant also testified at length in explanation of the reports thus submitted. A final summary of plant values, as found by each accountant, is given in an exhibit prepared by Mr. McShane, showing in separate columns the amount of each item of such value and the excess value found by one account-

ant as compared with that of the other, which exhibit we set out as table No. 1.

958 TABLE No. 1.

Comparative Statement of St. Louis Exchange Plant Values in Service as at December 31, 1913.

			Wass figures.	
	Wass.	McShane.	Over.	Under.
Land Devoted to Operations	$332,474.98	$40,158.38	$282,316.60	.....
Ground Lease	.....	5,000.00	.....	$5,000.00
Buildings Devoted to Operations	516,779.63	460,716.07	56,063.56	.....
Central Office Equipment	1,564,450.03	1,534,609.11	29,840.92	.....
Subscribers' Station Equipment	1,073,342.89	1,065,986.36	7,356.53	.....
Exchange Pole Lines	678,287.30	673,261.52	5,024.78	.....
Exchange Aerial Cable	1,000,014.76	971,507.46	28,507.30	.....
Exchange Aerial Wire	635,417.05	638,345.50	17,971.55	.....
Exchange Underground Conduit	888,513.57	902,712.94	.....	14,199.37
Exchange Underground Cable	1,483,162.28	1,463,450.56	19,711.72	.....
Exchange Right of Way	27,264.44	27,565.39	.....	300.95
Interest during Construction	.....	3,879.02	.....	3,879.02
General Equipment—Furniture, Tools, Vehicles, etc	.....	113,738.85	.....	113,738.85
	$8,209,706.93	$7,900,932.16	$445,892.96 137,118.19	$137,118.19
			$308,774.77	
Less Reserve for Depreciation	.....	502,453.56	502,453.56	
	$8,209,706.93	$7,398,478.60	$811,228.33	

The total plant value in the Wass report is $8,209,706.93; in the McShane report, $7,398,478.60, or $811,228.33 less than the value by Wass. The difference thus shown is more apparent than real, and is due in large measure to the different theories of accounting and the views of the accountants as to what is properly
959 chargeable to plant account, and not to discrepancies in the books examined. When allowance is made for the different views of the accountants, and the facts disclosed by the books alone are considered, there is substantial agreement as to the amount of the investment in this property.

It will be observed that Mr. McShane has deducted the depreciation reserve shown by the books of the Company at the date of the valuation, to-wit, $502,453.56, while Wass has not. The sum thus deducted is the remainder of a larger sum appropriated from year to year as a depreciation reserve to be used for making replacements and renewals, as parts of the plant should become worn out or ob-

solete. It was not intended as a payment on capital account, and as the cost of replacements and renewals is to be borne by the public and not by the investor, we do not think it should have been deducted in an accounting to determine original cost.

The Wass report shows land value in the total sum of $322,474.98, while McShane allows but $40,158.38 of said amount and disallows $282,316.60, on the ground that lands of the book value of the latter amount were not being used in the service of the public. It may be that the sum thus disallowed by McShane was an investment in property that was not used and useful in the telephone business; that question will be discussed later. However, we think original cost—the basis of value now being considered—should be a reflection of the cost entered upon the Company's books, without resort to extrinsic evidence to determine whether the investment was properly or wisely made. It follows that in our opinion
960 the entire sum of $322,474.98 should be allowed as part of the book value.

Two other items of value included by Wass, but disallowed by McShane deserve mention. They are referred to in the testimony as "strike expense" and "interest on stock subscriptions," the former being in round numbers $19,000, the latter $48,000. These items do not appear separately in the above exhibit, but are included in the several items specifically set out in the Wass column.

In the year 1913 certain employes of the Company engaged in a strike and of the amount expended in con-ection with the strike expense there was charged to the St. Louis plant accounts the sum of $19,000. Whether the expense of the strike should be borne by the Company or by the public, or whether it should be considered an operating expense or chargeable to surplus or contingencies or other account, we need not now consider. It is so apparent that it should not be added to and become a part of the capital on which the Company is entitled to a return that discussion of the proposition is deemed unnecessary.

The item of interest on stock subscriptions is explained by Wass as follows: Increases of capital stock for extensions and additions to the plant were made from time to time, and in each instance the subscribers were notified of their prior right to subscribe for their proportional part thereof. In some cases the stock so subscribed for was paid in full at the time of the subscription; in others it was paid in installments. It was the custom of the company in the latter case to allow interest to the subscriber on such installments until the stock was fully paid for and issued, and the interest
961 thus allowed is included by Wass as a part of the investment.

This practice is sought to be justified on the well recognized rule of allowing interest during construction as a part of the capital. All of the stock subscriptions on which interest was so allowed were subscribed for by the then stockholders of the company. These stockholders would receive dividends on their stock from the earnings of extensions and additions to the plant as soon as the same were completed and put into operation.

In view of the fact that we are valuing the St. Louis exchange

alone and can allow as capital only such part of the proceeds from sales of increased capital stock as was put into extensions and additions to such exchange, it is evident that we have a very different question than if such capital had gone into a new exchange in another city, or into a toll line, in which case a substantial period of time would be required for construction before the investment would become productive. The building of a new line, or extending an existing one in the exchange under consideration, would be a matter of a few days, or weeks at most, and as soon as completed the investment would begin to yield revenue to the company, which would inure to the subscriber as dividends on his outstanding stock. And by allowing interest as claimed the subscriber would thus be receiving both a dividend and interest on his investment at the same time. Moreover, where an increase of stock is made in compliance with a statute, the subscriber is regarded in law as a stockholder from the date of his subscription, and "the issue of a certificate of stock to the subscriber is not necessary to create the
962 relation." (4 Thompson on Corporations, 2 Ed., Sec. 4474.)

In paying his installment the subscriber was not making a loan to the company, but discharging an obligation. It follows that in our opinion, interest paid on stock subscriptions under the facts of this case should not be allowed as a part of the investment.

Deducting from the Wass report and adding to McShane's, in conformity with the views expressed, the original cost of the St. Louis exchange as found by Wass is $8,142,706.93, and as found by McShane, $8,183,248.76, which latter sum we find to be the original cost as shown by the books of the company.

Reproduction Cost.

Separate appraisals of the property were made upon the theory of estimated cost of reproduction new less depreciation, and written reports thereof filed and introduced in evidence, one for the company by Engineer John J. Robinson, its general plant superintendent, and the other pursuant to an order of the Commission, by George P. Player, assisted by R. L. Baldwin and S. R. Morrow, the three being engineers of this Commission. There is substantial agreement between said appraisals as to the inventory and quantities of the physical property valued, but there is a wide discrepancy in values as to factors capable of reasonably exact determination.

The values of the several items of the physical property, without depreciation, as shown by said appraisals, and the differences between the two appear in the table following.

963 TABLE NO. 2.

Type of plant.	Robinson Exhibit 47.	Player Exhibit B.	Difference.
Land	$724,884	$212,771	$512,113
Buildings	747,686	442,780	324,906
Equipment	2,668,596	2,604,474	64,122
Aerial Plant	2,438,340	2,190,077	248,263
Underground Plant	3,286,742	2,880,865	405,877
Miscellaneous Property	249,902	*273,679	23,777
Right of Way	34,246	31,700	2,546
Total	$10,150,396	$8,616,346	$1,534,050
Clayton Exchange	91,136	81,448	9,688
	$10,241,532	$8,697,794	$1,543,738

It thus appears that Robinson's appraisal exceeds that of Player in the sum of $1,543,738. More than one-half of this difference is found in the two items of land, $512,113, and buildings, $324,906. These will be considered first, and as land and the buildings thereon have been dealt with by Player upon the same basis and are included or excluded in each case for the same reasons, we shall combine them in this discussion.

1. Lands and Buildings.

Robinson has included in his appraisal every parcel of property owned by the company, whether at present used in the telephone business or not. Player has included ten of the parcels thus valued by Robinson; three parcels have been allowed in part and excluded in part by Player, while seven have been wholly excluded by him. His
964 reason for excluding such lands and buildings is that the property, or part thereof so excluded, is not used and useful in the telephone business.

The following tables show (1) the values of the parcels included in both appraisals; (2) parcels included by Robinson and in part by Player; (3) parcels included by Robinson, but excluded by Player:

*NOTE.—Miscellaneous property is made up of the following items: Furniture and fixtures, teams and vehicles, tools and supplies.

TABLE No. 3.

Land and Buildings Allowed by Both Robinson and Player, Ten Parcels.

Parcel.	Robinson.	Player.	Player over.	Player under.
1. C. B. 5408 Cabany Central Office	$57,131	$51,528	....	$5,603
2. " 3565 Colfax " "	34,623	30,833	....	3,790
3. " 5051 Forrest " "	52,029	54,486	$2,457	.....
4. " 2123 Grand " "	32,449	35,952	3,503	.....
5. " 3926 Lindell " "	99,199	82,545	....	16,654
6. " 3001 Old South " "	4,966	4,276	....	690
7. " 793 Sidney " "	15,948	14,453	....	1,495
8. " 349 Tyler " "	31,984	34,185	2,201	.....
9. Barn at the Sidney Office	None	763	763	.....
10. Buildings at Pole Yards	45,282	32,534	....	12,748
Total	373,611	341,585	8,924	40,980
				8,924
Net Difference Player Under Robinson				32,056

NOTE.—All overhead charges are included in the above figures.

TABLE No. 4.

Land and Buildings Included by Robinson Partly Excluded by Player.

Parcel.	Player total value.	Excluded by Player.	Included by Player.	Included by Robinson.	Player under.	Player under total value by Robinson.
11. C. B. 274 Main-Olive. Central Office Building and Leasehold	$393,816	$196,908	$196,908	$476,159	$279,251	$82,343
12. C. B. 274, 919-921 Pine Street. This property is used in the amount of 62½% by the company and 37½% is rented	119,756	44,908	74,848	173,497	98,649	53,741
13. C. B. 429, Beaumont, Central Office. This building is jointly used by the Southwestern and A. T. & T. Co.'s (See Ex. B, page 54 for distribution)	65,034	42,797	22,237	66,453	44,216	1,419
Total	$578,606	$284,613	$293,993	$716,109	$422,116	$137,503
Total Included by Player				293,993		
Total Difference in Property above shown				$422,116		

NOTE.—The above figures include all overhead charges.

TABLE No. 5.

Land and Buildings Included by Robinson Wholly Excluded by Player, Seven

Parcel.	Robinson.	Player.	Player over.	Player under.
14. C. B. 274, 917 Pine Street 25'x109' 2"	$60,631	$58,278	.....	$2,353
15. C. B., Corner 10th and Pine and north on 10th to alley 51'x109' 2"	210,667	228,053	$17,386	.....
16. C. B. 429, Residence used as Old Ladies' Home on Locust Street near Beaumont.	32,043	31,852	.....	191
17. C. B. 5260, Euclid Central Office Building and Land at St. Louis Ave. and Kingshighway Blvd	62,001	60,222	.....	1,779
18. C. B. Vacant Lot, St. Louis Ave. and Kingshighway Blvd., 5260	2,925	2,808	.....	117
19. C. B. 2907, New South Central Office	8,964	8,516	.....	448
20. Other Leaseholds. This is property leased for pole yard buildings and was not considered by Player	5	None	.....	5
Total	$377,236	$389,729	$17,386	$4,893
Robinson's Value		377,236		
Net Difference Player over Robinson		$12,493		

NOTE.--All overhead charges are included in the above figures

965 Excluded in Part by Player.

Parcel 11 is a tract fifty feet by one hundred nine feet, as above described. The company holds this property as assignee of a lease for a term of ninety-nine years, commencing in the year 1888. This lease was acquired by the company the year of its execution for a cash consideration of $5,000. The annual rental reserved therein is $5,-500, and this rent has always been charged by the company as an operating expense. The lease was not offered in evidence and little is shown in the record as to its terms. The present six-story building on this land was erected by the company (date not shown) at a cost of $183,722.45.

In view of the fact that the company has charged as an operating expense the rent paid for the use of this land, an interesting legal question is presented as to whether the company is entitled to have the present value of the leasehold capitalized against the public. However, both appraisals have proceeded on the theory that the company is entitled to the advantage of the increased value of the leasehold. We think that the more reasonable view, and we shall so treat it in this report. (See Beale & Wyman on Rate Regulation (2 Ed.), Sections 376-7). But when the leasehold value is capitalized the rent cannot be charged as an operating expense. State Journal Ptg. Co. v. Madison Gas & Elec. Co., 4 W. R. C. R., l. c. 537.

Robinson valued the leasehold interest at the sum of $243,862, in addition to the annual rental paid, and the building at $232,297, making the total sum of $476,159. Player valued leasehold and building at $393,816, but excluded fifty per cent of such value
966 on the ground that that proportion of the property was not being used in the public service. It was shown that since the company acquired this property and erected the building thereon it has become very valuable as a retail business location. The company used the entire building for some time after its construction but when the property became more valuable, decided that it was not economical to use the two lower stories for telephone purposes and rented them to a retail boot and shoe company for $12,000 per year, under a lease for five years, with the privilege of renewal in the lessee. The four upper stories have been used continuously by the telephone company.

The renting of the two lower floors was prompted by economy of management, and as this property has been enhancing in value from year to year and the value of the leasehold has been estimated on the assumption that it will so continue, the same business policy that dictated the withdrawal of these two floors from the telephone service will keep them out of such service in the future. The value of the property used by the company as compared with that rented to the shoe company was apportioned by Player upon the basis of the lower floor having three times the rental value of each of the others, so that the two lower floors were considered of equal value to the upper four; hence, the allowance and exclusion upon a fifty per cent basis. As

these two floors are not now and have not been for years used in the public service and there is no probability that they will be so used in the future, we think they were properly excluded and that the basis of apportionment as made is supported by the testimony.

967 Parcel 12 is occupied by a two-story building, having two rooms below and two above. One of the lower rooms is rented to a private business concern; the other three are used by the company. A training school, now conducted in the Euclid property, hereafter referred to, is proposed by the engineers of the Commission to be returned to this property, where until recently it was carried on, and, in view of that fact, that this is one tract and one building, we think all of it should be included as a part of the company's property in this valuation.

Parcel 13 is called the Bomont exchange. This property is used by the company for its local exchange business and for its own long distance equipment, also by the American Telephone and Telegraph Company for its long distance switchboard and equipment. It was apportioned by Player on the actual amount of floor space occupied for each class of service, which was found in the following percentages: Local switchboard, 34.18 per cent; toll board, 26.31 per cent; American Telephone and Telegraph Company toll, 39.51 per cent, and the value of the proportion of the property used in the local exchange only was allowed.

It is contended by the Company that all of this property should be charged to the St. Louis exchange for the reason that the exchange receives, as its proportion of the charges for toll messages which it originates, double the cost of the service rendered and that the use of this property for toll line purposes is taken into consideration in the amount paid to the exchange for said service.

The American Telephone and Telegraph Company owns indirectly and controls the Company whose property we are

968 now valuing. In keeping the accounts of the Company the St. Louis exchange is credited with ten cents for each long distance message originating on that exchange and sent over the American Telephone and Telegraph Company's long distance lines, and with twenty-five per cent of the amount received for each message over the toll lines of the Company. The general rule in such cases is to allow the originating line or exchange twenty-five per cent of the toll charge, which will average much in excess of the amount allowed to this exchange by the American Telephone and Telegraph Company, to-wit—ten cents for each message.

We see no reason why this exchange should be denied a reasonable profit on the service rendered in connection with toll messages. The toll and long distance service, so far as this exchange is concerned, should be placed upon the same footing as if such service was rendered by it as an independent concern and under circumstances in which it would be free to act and protect its own interest as against the toll line companies. Upon such assumption there can be no doubt that the local exchange would not and should not be required, under the facts of this case, to furnish office room to the American Telephone and Telegraph Company, or to this Company

for its toll business. We therefore, approve of Player's apportionment of this property assigned to this exchange.

Wholly Excluded by Player.

Parcels 14 and 15 are situate in City Block 274 and located by street numbers, as follows: Parcel 14, 917 Pine street, store
969 building. Parcel 15, 923 Pine street, Helm Hotel; 925 Pine street, corner Tenth and Pine streets, 204, 206, 208 and 210 North Tenth street, store buildings. Parcel 15 was leased to the Company in 1905 and held with a purchase option until April 1909, at which time it was purchased. Parcel 14 was purchased in November, 1913. It was shown that no part of this property has ever been used in the telephone business, and the only benefit accruing to the public, so far, is the rents received, which go into the earnings of the Company. The Company's reason for including this property in its valuation is that it is located in what is termed the "wire center" and that at some future date it intends to erect a building thereon suitable for telephone purposes. This same reason is also given for including parcels 16 and 18.

Parcel 17 is referred to as the Euclid Exchange Building. The building on this property was constructed for telephone purposes, but it was found impracticable to use it as an exchange, and another exchange (Colfax) was constructed and equipped in lieu thereof. During the spring of 1914 the Company moved its training school from 919 Pine street to the Euclid Building. It is shown by the testimony that the purchase of this property and the erection of a building thereon for telephone purposes was an engineering mistake, and that its use for training school purposes is unnecessary, as the school could be more conveniently operated at its former location, 919-921 Pine street.

The building on parcel 19 was in course of construction at the time of the appraisal. When completed it will be used to replace the old South Exchange (parcel 6 included in Player's ap-
970 praisal) and South Exchange will then be abandoned. In view of the fact that this property will be used by the Company in the near future we think the land should be included in this valuation, but the building not being in existence at the date of the appraisal, should not.

Parcel 20, a leasehold used for pole yard and buildings, was included by the Company. It was overlooked by Player and should be allowed.

In support of its contention that the parcels excluded by Player should be valued at the property of the Company used and useful in the public service, it is urged in the Company's brief that:

"The used and useful question here inevitably resolves itself into the question whether this Commission shall declare itself for economy and good service, or for extravagance and poor service. If this Commission shall say that property bought in good faith, and the exercise of prudent business judgment, in anticipation of future needs for which it is clear it will soon be necessary, can have no

return, the utilities must yield to its declaration of policy, and must abandon their present broad-gauged and economical policy for a costly and uneconomical hand-to-mouth policy. The inevitable result will be an increase in cost and a decrease in efficiency of service. * * *

"The only difference between such proper investment in lots and buildings and investment in cable or supplies, or other advance investment containing proper anticipation of future demands, lies in the fact that portions of such real estate not put into immediate use may be rented and the ultimate cost of the investment reduced by turning the rentals into the treasury as revenue."

971 It must be admitted that in the management of a telephone property or other public utility, the reasonable future needs of the plant should be anticipated and provided for. It would be a most unwise and short sighted policy to install a switchboard, conduit or cable sufficient only to meet the demand at the time of such installation. Such a policy would necessarily result in increasing the cost of the service. However, reasonable provision for the future in such matters, we think, is not analogous to and does not justify the investment of large amounts of capital in separate parcels of real estate which will not be needed in the public service for a number of years, as was done by the Company under the facts of this case.

Counsel for the Company contends that the purchase of such lands is justified on the ground of economy, for the reason that they have greatly enhanced in value and that the Company was therefore enabled to procure them at a much lower cost than if it had waited until the actual needs of the service demanded their purchase. That argument would have weight if it appeared that the public participated in such increase of value. But when it is considered that for the years this property was owned and not in the public service the public was paying the Company a return thereon, and that as soon as it shall become useful it is to be capitalized against the public at its full value at that date, we are unable to see the wisdom or economy of that course so far as the public is concerned. The matter may be better understood if we take a concrete illustration. Parcel 16 is now rented by the Company for use as an "Old Ladies'
972 Home." This tract was purchased in 1908 for the sum of $9,297. It has never been used for telephone purposes. In this appraisal it is valued by Robinson at the sum of $32,043. The Company has thus been receiving a return from the public on this property for seven years, and now values it at a sum which would yield a profit to the Company of over $20,000, while the public so far has received no benefit whatever. When this property will be put into the public service, if ever, it will be valued as if acquired at that time. Then, why not defer the purchase until near the time the property is needed? By so doing the Company would lose nothing and the public would not be paying a return on the property until it would be useful in rendering public service. We do not mean to be understood as holding that if the purchase of a certain

tract of land is necessary and that because it is somewhat larger than needed at the time, the purchase for that reason should be disapproved; nor that the Company may not acquire any property that may be necessary for use in the public service in the near future and be entitled to a return thereon. A liberal policy toward the Company should be adopted in such matters. However, in this case, the Company is claiming a return from the public on real estate of the alleged value of $377,236, (Table 3) none of which is used in the telephone business, and will not be so used within a reasonable time from the date of purchase. It may have been, and doubtless has been very profitable to the Company to purchase these lands as an investment, but they should not be capitalized against the public in a rate-making case.

Deducting from the Robinson appraisal and adding to
973 Player's, in accordance with the foregoing views, the total values of lands and buildings on the theory of cost of reproduction new, stand: Robinson's, $816,260; Player's, $682,926.

In determining the estimated cost of reproduction new, as between the said two appraisals of lands and buildings, we shall refer briefly to the testimony in support of each.

Robinson and Player are both experienced telephone experts. Robinson's estimates of values were based largely on his own judgment. While some inquiry appears to have been made of real estate men qualified to give an opinion as to such values, it was not made by Robinson in person, but by correspondence conducted by employes in the office and the testimony is not at all satisfactory as to the extent or the reliability of the information thus obtained. On the other hand, Player personally inspected each parcel and Engineers Morrow and Baldwin, in addition to viewing the property and investigating as to the values of adjacent property, interviewed a number of well-known real estate men and secured their opinion as to the value of the several parcels. After obtaining this information, the three engineers conferred and agreed as to the reasonable value of the property in each case.

Without going into further details as to the methods adopted in making the respective appraisals, it is sufficient to say that we think the weight of the evidence supports the Player valuation, and our conclusion is that the estimated cost of reproduction new of the lands and buildings of the Company used in the public service at the date of this valuation was $682,926.

974 2. Items of Plant Other than Land and Buildings.

The total difference between Robinson and Player as to remaining items of plant values is $706,719, exclusive of "Working Capital," Player being lower than Robinson on each item, except "Miscellaneous Property," in which his value exceeds that of Robinson in the sum of $23,777.

We shall not extend this report to the length necessary to make a comparison of the numerous minor differences resulting in the above total. Robinson has applied a higher standard of labor cost

and of overhead expense than Player. These enter into the estimated value of every item appraised by him and account, to a large extent, for the higher values arrived at. But aside from his higher labor cost and overhead expense there are a few important items included in the above differences which should be referred to.

Twenty-six thousand and fifty dollars of the difference in the estimates of "Equipment" represents the value of the switchboard and equipment used in the Bomont exchange for toll lines and long distance business. This amount must be excluded for the reason heretofore given for excluding the proportional part of the real estate of this exchange devoted to the toll business of the Company and the business of the American Telephone and Telegraph Company.

One hundred and forty-seven thousand dollars of the difference in values of the "Underground Conduit" is represented by the estimated cost of removing and replacing pavement laid since the construction of the conduit. Robinson included such cost in his valuation. Player did not. Counsel for the Company strongly urges that whether such cost be added as a basis for rate making
975 or not, it must be included in estimating the cost of reproduction new, for, the pavement being there a new plant could not be constructed without incurring that cost. That argument would be persuasive if the ultimate object in view was to ascertain the cost of reproducing new, under present conditions, the St. Louis telephone exchange, but as we are merely considering this theory as an aid in arriving at present value along with other facts and circumstances tending to prove such value, it would be a useless formality to add such pavement cost, unless we intended to include it as a part of the present value of the property. In our opinion it should not be so included. While much can be said in support of the Company's contention, it seems most unreasonable and unjust, if not against public policy, that the people who pay the entire cost of paving the streets should have their telephone rates advanced, for the reason that such improvement has increased the value of the telephone property, although the Company contributed nothing to the cost of such pavement. We cite a number of authorities on this proposition, which, we think, show that the current of authority is against the company on this question: Buffalo Gas Co. v. City of Buffalo (N. Y. P. S. C. 2nd Dist.), decided February 4, 1914; City of Ashland v. Ashland Water Co., 4 Wis. R. C. R.; State Journal Printing Co. v. Madison Gas & Electric Co., 4 Wis. R. C. R.; *In re* Manitowoc Water Works Co. (1911), 7 W. R. C. R.; Kings County Light Co., N. Y. P. S. C. 1273.

Whitten, in his work "Valuation of Public Service Corporations," states at page 81:

"Considered from all points of view, the method of repro-
976 ducing the existing plant under the actual physical or other conditions under which it is actually constructed seems fair to both parties. It is a rule that corresponds to the actual equities of the parties, while the other rule gives an unfair advantage in some cases to the public and in some cases to the company."

Poles.

Robinson is $117,000 higher than Player on his valuation of poles, an item included in "Aerial Plant." Both are agreed as to the cost of the pole laid down at the Company's yards. The difference arises out of Robinson's higher labor cost and overhead expense. In order that the methods of arriving at the total cost resulting in such a wide difference may be better understood, the following table showing the cost of a thirty-five foot, Class "B" pole in place, including all charges as shown in the exhibits introduced respectively by Robinson and Player, has been prepared.

TABLE No. 6.

Comparison of Cost of One 35-Foot Class "B" Pole in Place, Including All Charges.

	Robinson Exhibit No. 50.		Player Exhibit "B."	
Material:				
Cost of Pole	$8.76		$8.76	
Freight per Cwt. 20c	1.30		1.30	
Paint and Carbolium	.64		.64	
Total	10.70		10.70	
Supply Expense 9.45% of Material	1.01		None	
Total	11.71		.....	
Loss on Material 1%	.12		None	
Total Cost of Material		$11.83		$10.70
Labor:				
Shaving, Framing and Painting	.97		.6933	
Cost of Digging and Setting	3.00		1.6670	
Total	3.97		.....	
Supervision and Tool Exp. 20.46%	.81		None	
Hauling Pole and Excess Earth	1.14		.7997	
Total	....		3.1600	
Add 10% for lost time	None		.3160	
				3.48
Total Labor and Incidentals		5.92		14.18
Total		17.75	Add 10% for Profit	1.42
		None		15.60
Total Cost in Place		17.75		

Overhead Charges:		
Omissions and Contingencies 5%	.89	
Total	18.64	
Engineering 5%	.93	
Total	19.57	
General Expense 1.88%	.37	
Total	19.94	
Taxes 2.2% on 60% valuation $11.96	.26	
Total	20.20	
Interest 6% for 6 months	.61	
	None	
Total Cost in Place Including Overheads	20.81	
Robinson	20.81	
Player	17.94	
Difference	2.87	

Overhead Charges:		
Contingencies 2%		.31
Engineering 5%		.78
None		
Taxes 2%		.31
Interest 5% for 10 months		.78
Legal Expense 1%		.16
		17.94

Robinson made his estimate of pole values by considering all poles as of Class "B" which is the intermediate class. Player determined by actual investigation to which class each pole belonged and valued it accordingly. As both agreed on the value of material, the difference resulting from thus estimating all poles as Class "B" instead of classifying and valuing them according to the facts, is definitely ascertainable and amounts to an excess by Robinson of $22,429.

After both experts had testified and introduced exhibits as above, Robinson in rebuttal introduced Exhibit "I," purporting to show the "Labor" and "Incidental Costs" actually incurred by the Company in the installation of certain poles for a period of eighteen months, and comparing therewith the labor and incidental cost of all poles in the plant under the methods as testified to by Robinson and Player. From this exhibit it appears that the actual labor and incidental cost to the Company for the period taken was $7.03 per pole, while the average labor cost of all poles in the plant, applying Robinson's method, was $6.067, and by Player's $4.34. As the showing made by this exhibit is relied upon by the Company as sustaining Robinson and discrediting Player, we set it out as Table No. 7.

978 TABLE No. 7.

St. Louis Inventory and Appraisal.

Comparison of Labor and Incidental Costs of Poles According to Appraisal by Mr. Player, Appraisal by the Southwestern Co., Actual Costs as Determined from Specific and Routine Estimates.

	Mr. Player's appraisal.			Southwestern Company's appraisal.		
Size of pole.	Labor and incidental unit cost.	Number of poles.	Total cost.	Labor and incidental unit cost.	Number of poles.	Total cost.
20	1.1867	35	$41.53	2.38	73	$173.74
25 B.....	1.7798	395	703.02	2.94	756	2,222.64
25 C.....	1.7078	396	676.29			
30 A.....	2.5107	156	391.67			
30 B.....	2.4067	972	2,339.31	4.01	1,866	7,482.66
30 C.....	2.3447	816	1,913.28			
35 A.....	3.3690	1,155	3,891.20			
35 B.....	3.1600	7,217	22,805.72	5.11	14,509	74,140.99
35 C.....	3.0560	6,062	18,525.47			
40 A.....	4.5862	331	1,518.03			
40 B.....	4.5862	2,069	9,488.85	5.98	4,108	24,565.84
40 C.....	4.2772	1,738	7,433.77			
45 A.....	5.1885	170	882.05			
45 B.....	5.1885	1,064	5,520.56	7.38	2,216	16,354.08
45 C.....	4.9805	894	4,552.57			
50 A.....	6.3285	288	1,822.61			
50 B.....	6.3285	1,797	11,362.32	8.96	3,658	32,775.68
50 C.....	5.9115	1,509	8,920.45			
55 A.....	7.1158	492	3,500.97			
55 B.....	7.1158	493	3,508.09	10.63	998	10,608.74
60 A.....	9.4028	120	1,128.34			
60 B.....	8.1528	121	986.49	12.27	244	2,993.88
65 B.....	9.8653	29	286.09	14.91	29	432.39
70 B.....	10.4719	9	94.25	16.91	11	186.01
Stubs	3.1670	556	1,760.85	7.67	494	3,788.98
Total		28,884	$113,953.78		28,962	$175,725.63
Average Cost Per Pole.....			3.945			
Plus 10% Lost Time.....			.395			
Total Average Cost per Pole.....			$4.34	Average Cost per Pole.		$6.067

979 *Actual Costs as Determined from Specific and Routine Estimates.*

Routine.

	Labor.	Incidentals.	Total cost.	No. of units.	Unit cost.
December	1,539	1,565	3,104	436	7.119
January	1,274	1,103	2,377	244	9.742
February	865	660	1,525	268	5.691
March	766	747	1,513	103	14.689
April	358	224	582	123	4.732
May	537	481	1,018	243	4.189
June	586	289	875	220	3.977
Total Routine	5,925	5,069	10,994	1,637	6.716

Specific Estimates.

Estate No. and Title.					
#33 South District	1,171	636	1,807	249	7.257
#69 Colfax	286	121	407	82	4.963
#78 Gravois Avenue	547	101	648	59	10.982
#104 and 112 Gravois Ave	1,006	309	1,315	151	8.709
Total Specific	3,010	1,167	4,177	521	7.017
Total Routine	5,925	5,069	10,994	1,637	6.716
Total Specific	3,010	1,167	4,177	521	8.017
Grand Totals	8,935	6,236	15,171	2,158	7.03
Average Cost per Pole					7.03

A study of table No. 7 discloses that a large difference exists between incidentals as estimated by Robinson and as shown by the actual costs determined from the specific and routine estimates. The total for "Labor" and "Incidentals," as estimated by Robinson for a thirty-five foot "B" pole, is $5.11. From table No. 6 we find from Robinson's detail estimate that this is made up as follows:

Shaving, framing and painting	$0.97
Cost of digging and setting	3.00
Hauling pole and excess earth	1.14
	$5.11

In submitting his Exhibit "I" Robinson has excluded the 81 cents for supervision and tool expense, as shown in his detail estimate

(table No. 6). No explanation is offered for doing this and we shall therefore accept his figures as shown in table No. 7.

The only item in the above which could possibly be considered as an incidental is $1.14 for "Hauling pole and excess earth." On this basis we have from Robinson's detail estimate,

Labor.	Incidentals.	
$3.97	$1.14	Per cent of Labor, 28.7.

From the specific and routine estimates we find that for the average the incidentals are 70 per cent of the labor and in one case run as high as 102 per cent. It would be as reasonable to assume that in preparing his appraisal Robinson would have the actual costs before him and, without further explanation, we are at a loss to
980 understand this large difference, and it raises the question whether some, if not all, of the charges covered by Player and Robinson as "Overhead Expense" are not included in "Incidentals" in the "Specific and Routine Estimates." From table No. 6 we find that Player's estimate of a thirty-five foot "B" pole in place, exclusive of material, but including all "Labor" and "Overhead Expense," is $7.24, and Robinson's $8.98, while the average from the "Routine and Specific Estimates" for "Labor" and "Incidentals" only is $7.03. Assuming that "Overhead Expense" is not included in the "Routine and Specific Estimates" and adding such "Overhead Expense" thereto, in order to put it on a comparable basis with Robinson and Player, we have with Robinson's "Overhead Expense" added a total average cost per pole for the Specific and Routine Estimates" of $10.09, and with Player's "Overhead," $9.35. Neither size nor class of pole is given in the "Routine and Specific Estimates" thus compared. All poles set by the company in a given month were not included, but the poles taken were selected by Robinson as fair for this comparison. We think the poles selected were either of a higher labor cost than the average pole of the plant, or that overhead expense is included in the column "Incidentals," and that the comparison thus made is not upon the same basis as the estimate made by either Robinson or Player.

We conclude this too lengthy review of these pole tables with the statement that, without committing the Commission to an approval of Player's value and overhead expense in every particular, we
981 think his estimate of pole values reasonable and not unjust to the company.

Clayton Exchange.

As has been stated earlier, there are two classes of service rendered by the Clayton exchange, i. e., Hanley (St. Louis) service and Clayton local service. There are 243 Hanley stations and 134 Clayton stations; the value of the property should be divided upon the station basis, allowing $52,504 as the value of the Hanley portion and $28,944 as the Clayton portion. The Clayton portion should be deducted from Player's appraisal.

Deducting the four items considered, namely, the proportion of the Bomont exchange, the proportion of the Clayton exchange, the cost of pavement and the difference on poles, there remains a difference of $546,553 between the two appraisals on that part of the plant now under consideration. Without taking up the several remaining items of the appraisals resulting in this difference, it is sufficient to say that we have considered them and see no reason to question the reasonableness of Player's values, and as herein modified we shall accept them in determining the estimate of "Cost of Reproduction New" of this plant. In doing so, it is without disparagement of Robinson, either as an engineer or as a witness. His conduct before the Commission was creditable in both respects, but we think his estimates of value generally are rather high. On the other hand, we do not find, as suggested by counsel for the company, that Player resolved every doubt against the Company and in favor of the public. His testimony appears to be entirely free of bias in
982 favor of either party in interest, and the same can be said as to the two engineers who assisted him throughout. In a telephone case in Oklahoma, in which Player as engineer for the Commission of that State made an appraisal, the Supreme Court on appeal said:

"Mr. Player, the telephone expert of the Commission, who throughout the proceeding has demonstrated himself to be proficient in telephone construction and operation, and whose fairness is attested by the fact that his opinion and estimate, wherever the same were given, have been adopted by all parties, did not testify upon this question." (Pioneer Telephone & Telegraph Co. v. Westenhaver, et al., 29 Okla., l. c. 453.)

Transmitters, Receivers and Induction Coils.

The company does not own the transmitters, receivers and induction coils of its telephones, but pays an annual rental for the use thereof to the American Telephone and Telegraph Company. The amount thus paid to the parent company as rentals and as compensation for alleged valuable services rendered to the company by the officers and employes of the American Telephone and Telegraph Company is 4½ per cent of the annual gross revenues, amounting in the year 1913 to the sum of $95,129.82. It is shown in the testimony that the instruments thus rented can be purchased in the open market, and we think the arrangement made with the American Telephone and Telegraph Company is not favorable to the company and would not have been made but for the intercorporate relation existing between the two corporations. The public should not be bound by such a contract or arrangement, and we have concluded to capitalize these instruments in the St. Louis ex-
983 change, those in stock, as well as those in use, at their market value, which, as shown by the testimony on behalf of the company, is $3.19 per set, or the total sum of $235,059. This sum should be included in the valuation as a part of the property on which the company is entitled to a return.

Working Capital.

We find that Robinson has included in his appraisal supplies on hand of the value of $137,303, and Player of the value of $137,719. No other allowance was made by Player on that account. This Commission, in accordance with the weight of authority, has in a number of valuation cases allowed a reasonable sum as working capital to be included as a part of the investment. We think the sum of $180,175 should be allowed in this case, which sum, together with the value of supplies on hand, amounts to about one-sixth of the gross annual receipts of the company.

Cost of Establishing Business.

Robinson has added to his estimate the sum of $1,495,626 as the proportion of the cost of establishing the business of the Company assignable to the St. Louis exchange. In reproducing a new plant, such as that under consideration with its present business connected before beginning operation, it would be necessary to estimate this element of value, for there can be no doubt that it would cost a very substantial sum after completion of construction to secure a business equal to that of the present plant. But in view of the fact that we are merely using this theory as an aid in arriving at the value of the plant now actually owned and in operation, and that the cost
984 of establishing its present business has always been charged as an operating expense, and therefore paid by the public, in our opinion, we cannot justly include it as a capital charge in this valuation. The fact that this exchange is an established business and in successful operation is an element of value and will be given due consideration in ascertaining the value of this property. McGregor-Noe v. Springfield Gas & Electric Co., 1 Mo. P. S. C. 468.

Cost New.

It follows from the views above expressed that the estimated cost of reproduction new of the physical property of the St. Louis exchange is $9,131,459.

Cost New Less Depreciation.

No sum for depreciation was deducted from the cost of reproduction new by either engineer in his estimate of the present value of the land or supplies; neither should rights of way nor working capital be depreciated. The remainder of the plant has been depreciated by the Company 14.02 per cent, and Player 14.17 per cent from its condition new.

Player depreciated each class of depreciable property separately upon a personal inspection thereof, and his per cent as above is the average. We think it fairly reflects the present condition of the property. The estimated value new of the property which he has

depreciated is $8,566,626; less depreciation, its value is $7,352,735, which latter sum added to the estimated value of the non-depreciable property, to-wit, $564,833, make the total estimated present value of the property on the theory of cost new less deprecation,
985 $7,917,568.

IV.

Stocks and Notes.

According to the report of the Commission's accountant, McShane, the Company has capital stock outstanding of the par value of $10,000,000.00
It has no outstanding bonds, but owes notes given for cash in the sum of 2,553,073.59

Total $12,553,073.59

The same report apportions the investment from the proceeds of said stock and notes between the St. Louis exchange and outside properties of the Company, as follows:

Amount brought forward $12,553,073.59
In outside exchanges and toll lines 4,081,955.10

In the St. Louis exchange $8,471,118.49

The total thus shown does not take into account the amount invested in property which we have excluded as not used and useful; neither does it reflect the amount invested from earnings of the Company, which the accountant's report shows to be the sum of $160,077.44.

986

V.

Conclusion.

In ascertaining the value of the property of the St. Louis exchange as herein defined, we have before us the results separately arrived at by the applications of two recognized bases of valuation, namely, (1) original cost to date, $8,183,248.76, and (2) cost of construction, new less depreciation, $7,917,568, together with other facts bearing up such value. We recognize the fact that property used in a business established, successful and permanent in character and of the magnitude, history and surroundings of this exchange, has a value above its actual cost less depreciation, and that such facts and circumstances should be considered in determining value. Upon consideration of these facts, and of all the evidence, our conclusion is, that on December 31, 1913, the fair value of the property of the Southwestern Telegraph and Telephone Company used and useful in the public service of the St. Louis exchange, including every element of value, and taking into consideration every fact and circumstance bearing upon such value, was $8,500,000.

VI.

Proposed and Present Rates.

For some years prior to December 2, 1913, the rates of the Company for direct line, unlimited service, were $78 per year for business telephones and $48 for residence telephones. There were other rates for party line and measured service, which need not now be stated. The proposed increase affects business rates only; residence rates remaining unchanged.

987 As previously stated, the Company filed with this Commission, December 2, 1913, the schedule containing the proposed increased rates. This schedule was suspended by order of the Commission, pending a valuation of the property and an investigation of the reasonableness of such rates; so that the rates prescribed therein have not yet become effective.

A table appears in the Company's brief, which sets forth the existing rates, the proposed rates and the changes by reason thereof. We find it correct, and as it shows in convenient form the rate situation before us, we set it out below:

Statement of Rate Schedules (Present and Proposed) of Only the Classes of Service that Change under the Proposed Schedule for St. Louis Exchange District.

Class of service.	Present rate, wall or desk.	Proposed rate, wall or desk.
Business:		
Unlimited:		
Direct Line, per year	$..... $78.00	$120.00
Two-party Line, per year	..... 66.00	Withdrawn
Measured:		
Direct line, per year	..... 72.00	78.00
Local messages allowed, per year	1,800	1,920
Additional messages, each	2c	2c
Direct Line, per year	..... 60.00	63.00
Local messages, allowed per year	800	1,320
Additional messages, each	3c	3c
Direct Line, per year	..... 45.00	45.00
Local messages allowed, per year	600	720
Additional messages, each	4c	4c
Two-party Line, per year	..... 48.00	Withdrawn
Local messages allowed, per year	800	
Additional messages, each	3c	3c
Two-party Line, per year	..... 39.00	39.00
Local messages allowed, per year	600	660
Additional messages, each	4c	4c
Coll Collectors (nickel coin)		

Class of service.	Present rate, wall or desk.		Proposed rate, wall or desk.	
Direct Line, guarantee per day	15c		15c	
Additional messages	5c		5c	
	40% discount			
Two-party Line, guarantee per day	10c		10c	
Additional messages	5c with 20% discount			
Joint User:				
Unlimited, per year	.....	10.00	....	....
Measured, per year	.....	10.00	....	5.00
Private Branch Exchange, p'r y'r	.....	10.00	....	30.00
Private Branch Exchange, Com'l Unlimited, minimum rate, per year	234.00	.....	....	324.00
Division of Value—				
Switchboard, 10 jacks or less	.....	30.00	....	36.00
Two stations	@ 6.00	12.00	@ 6.00	12.00
First Trunk	.....	72.00	....	144.00
Second Trunk	.....	72.00	....	132.00
Total		234.00		324.00
Private Branch Exch., Com'l Unl. Additional Equipment, per year Switchboard, non-multiple:				
11-50 lines	.....	48.00	Switchboard Non-multiple and Multiple $6.00 per year for each additional strip of 10 jacks.	
51-100 lines	.....	96.00		
Over 100 lines, per line	.....	1.20		
Multiple:				
100 lines or less	.....	275.00		
Over 100 lines, per line	.....	2.75		
Stations, each	.....	6.00	....	6.00
Trunks, each	.....	72.00	....	120.00
988				
Semi-Automatic—Measured:				
Minimum rate, per year	.....	None.	....	$132.00
Division Value:				
3 Stations, per year	.....	None.	@ 18.00	54.00
1 Trunk, including 1,920 messages, per year	.....	None.	....	78.00
Total	.....	None.		$132.00
Additional Equipment:				
Stations, each per year	.....	None.		18.00
Trunks, per year	.....	None.	Bus. Dir. Line Meas. Rates apply for trunks and messages.	
Messages	.....	None.		
Secrecy switches, each	.....	None.	....	3.00

Class of service.	Present rate, wall or desk.		Proposed rate, wall or desk.	
Installation and maintenance charge to cover installation and maintenance of circuits and cables on subscriber's property, also applicable to minimum rate..... Residence.	.....	None.	....	Actual Cost
Coin Collectors (nickel coin) Direct Line, guarantee per day.....	10c		10c	
Additional messages.....	5c with 40% discount		5c	
Two-party Line, guarantee per day.....	7½c		7½c	
Additional messages.....	5c with 20% discount		5c	
Semi-Automatic—Unlimited:				
Minimum rate, per year...	.....	96.00	....	$84.00
Division of Value:				
Stations	4 @ 12.00	48.00	3 @ 12.00	36.00
1 Trunk.....	.....	48.00	....	48.00
Total	.....	96.00	....	84.00
Semi-Automatic—Unlimited:				
Additional Equipment, per year:				
Stations, each.....	.....	12.00	....	12.00
Trunks, each.....	.....	48.00	....	48.00
Secrecy Switches, each....	.....	3.00	....	3.00
Installation and maintenance charge to cover installation and maintenance of circuits and cables on subscriber's property, also applicable to minimum rate...	.....	None.	....	Actual Cost
Private Branch Exchange, Com'l Measured, minimum rate per year.....	.....$177.00		....	$183.00
Division of Value:				
Switchboard, 10 lines or less	.....	30.00	....	36.00
Two stations.....	$6.00	12.00	$6.00	12.00
Two trunks.....	30.00	60.00	30.00	60.00
3,000 messages.....	.....	75.00	....	75.00
Total	.....	117.00	....	183.00
Additional Equipment, per year Switchboards, non-multiple:				
11-50 lines.....	.....	48.00	Switchboard Non-multiple and Multiple $6.00 per year each additional strip of 10 jacks.	
51-100 lines.....	.....	96.00		
Over 100 lines, per line..	.....	1.20		
Multiple:				
100 lines or less.....	.....	275.00		
Over 100 lines, per line....	.....	2.75		

Class of service.	Present rate, wall or desk.		Proposed rate, wall or desk.	
Stations, each	.....	6.00	....	6.00
Trunks, each	.....	30.00	....	30.00
Messages		2c		2c
Private Branch Exchange—Hotel:				
Switchboards, 25-75 lines, per year	.....	60.00	Switchboard, 10 jacks or less $36.00 per year $6.00 per year for each additional strip of 10 jacks.	
76-100 lines, per year	.....	90.00		
101-125 lines yer year	.....	150.00		
126-150 lines, per year	.....	180.00		
151-200 lines, per year	.....	240.00		
Over 200 lines, per year	.....	300.00		
Stations, Desk Sets, each per year	.....	None.	....	6.00
Stations, Coin Collectors, each per year	.....	None.	....	None.
Semi-Automatic Unlimited:				
Minimum rate, per year	.....	144.00	....	174.00
Division of Value:				
Stations	4@$18.00	72.00	3@$18.00	54.00
1 Trunk	.....	72.00	....	120.00
Total	.....	144.00	....	174.00
Additional Equipment, pear year:				
Stations, each	.....	18.00	....	18.00
Trunks, each	.....	72.00	....	120.00
Secrecy Switches, each	.....	3.00	....	3.00
Station mileage (cable) per 100 ft	.....	6.00	....	None.
Installation and maintenance charge to cover installation and maintenance of circuits and on subscriber's property, also applicable minimum rate.	.....	None.	....	Actual Cost.

989 An examination of the above table shows that the basis of charges for the several classes of service described is quite complex, yet when it is considered that the telephone is a necessity to every busines- of any importance in the City of St. Louis, together with the extent of its use by the several subscribers, depending in each case upon the character and volume of the business, it was to be expected that there should be a variety of rates, in order that the Company might fix, as near as may be, its compensation according to the measure of the service rendered.

In determining the reasonableness of the proposed rates, it is well to consider first, whether the Company is receiving a reasonable return on its property under the present rates. Three factors enter into the consideration of that question (1) the value of the property upon which the Company is entitled to a return, (2) the gross revenues received and (3) the cost of doing the business.

In considering these factors we have taken as the date of the valuation of the property, December 31, 1913, and the gross revenues and

operating expenses for the calendar year 1913. We have already ascertained the value of the property to be $8,500,000, and that need not be further considered.

2. Gross Earnings.

The gross operating income, as shown by the Wass report, is $2,146,747; by McShane's, $2,154,594, the latter being $7,847 in excess of the former. This difference arises out of the fact that Wass has considered certain items as "non-operating" revenue,
990 while McShane has treated the same items as "operating revenue;" it does not affect the result, and placing both upon the same basis, there is substantial agreement that the total gross revenue is $2,154,594. This sum is subject to modification, by reason of the fact that we have excluded certain real estate from the valuation of the Company's property, and, therefore the rents received from such property should be deducted from the gross revenue. The rents thus to be deducted are from the Olive street leasehold, $12,000, and from the Bomont exchange $422, making a total of $12,422.

According to McShane's report and testimony the St. Louis exchange sustains a deficit of $17,638, by reason of its toll service rendered in connection with the toll business of the Company and of the American Telephone and Telegraph Company. This amount does not include any portion of the wages paid to exchange operators for handling toll calls through the local exchanges. The experts do not agree as to the amount of such deficit, witness Benzel, for the Company, fixing it at $8,979. The difference grows out of different methods of apportioning the expense common to both toll and exchange business. McShane apportions it on the basis of the salaries paid for the two classes of service; Benzel according to the number of messages. The salary basis is used by the Company in apportioning such common expenses between its several exchanges. We think it the better of the two methods, and therefore adopt the amount of the deficit as found by McShane. It is contended in the Company's brief that whatever the deficit may be, it results from the insufficiency of the amount credited to the St. Louis exchange
991 for the toll service rendered for the Company, and not by reason of that rendered for the American Telephone and Telegraph Company. In view of the relationship existing between these two corporations, we shall not attempt to decide between the two as to the cause of the deficit. It must be admitted that the St. Louis exchange should receive at least the cost of its toll service, if not a reasonable profit in addition thereto, as is rightfully claimed for other service, and we will, therefore, add to the gross income the amount of such deficit, namely, $17,638.

There should also be added to gross income the rental received for the storeroom in the property at 921 Pine Street, $1,635. The proportion of this property represented by this room has been excluded by the Commission's accountant and engineer and, con-equently, the rents received therefor were not included in the gross revenues.

We have held that all of said property should be included in the valuation, and therefore, the rent as above should be added to income. Correcting the amount of the gross income in accordance with these views, we have the total sum of $2,161,445.

3. Operating Expenses.

Omitting from the gross expense the items of Strike Expense, The Four and One-half Per Cent of Gross Revenue paid to the American Telephone and Telegraph Company and Depreciation, which items we shall consider separately, there remains, as shown by Wass, $1,342,625.47, and by McShane, $1,316,060.45, the latter being the lower in the sum of $26,564.62. This difference consists al-
992 most entirely of eleven items deducted and one added by McShane, and which we think the testimony fully warrants. The total gross expenses, therefore, with the above exceptions and subject to the changes hereinafter made, are $1,316,060.45.

There should be deducted from said total the sum of $2,750, being one-half of the annual rental paid under the terms of the ninety-nine year lease of the Olive Street property. All of the rent for said property, namely $5,500, has been charged to operating expenses, and as we have excluded 50 per cent of the value of this property in the valuation herein made, for the reason that it was not being used in the public service, a corresponding proportion of the rent paid should be disallowed as an operating charge.

The Company has created what is designated a "Pension and Benefit Fund," and there was charged to earnings for the year considered, $11,899.19, as the St. Louis' exchange proportion of this fund. This pension and benefit feature of the Company's business is too elaborate to discuss in detail. It provides for the payment of a pension to employes, conditioned upon age, length of service, etc., also for the payment of benefits in case of sickness or disability and for life insurance. These provisions for the welfare of employes, while commendable if done at the expense of the stockholders, instead of the public, more properly belong to the domain of insurance and charity, rather than to that of a telephone company. This Commission has no jurisdiction over such matters, and it is doubtful whether they are within the charter powers of the Company. But aside from that, we do not think this Company, and therefore every other public utility in this State, is authorized to collect from
993 the public moneys to be used as an insurance and pension fund for its employes. The Company should pay to the employe the full value of his services as agreed, so that at the end of the term of employment the account is squared and the parties are free to continue or sever the relation. The Railroad Commission of the State of Georgia in the case of City of Columbus et al. v. Southern Bell Telephone and Telegraph Co. (Not yet reported.) disallowed a similar charge by a telephone company.

Of the sum thus charged to earnings for the pension and benefit fund there are two items, $3,228.33, for "accident disability," and $5,209.83 for "sickness." The former may have been a valid charge

in settlement of a liability for injuries to employes, and the latter for wages during temporary sickness, which could have been properly charged as an operating expense. In the state of the record, we do not feel warranted in disallowing these two items, but the remainder, $3,461.03, shall be deducted.

There should be added to operating expenses the sum of $10,810, which, as shown by the testimony, was the cost of the maintenance of transmitters, receivers and induction coils for the year 1913. We have included these instruments in the valuation as a capital charge, and therefore the Company should bear the cost of maintaining such property.

Making the additions and deductions as above, the total operating expense stands $1,320,659.42.

Strike Expense.

There was a strike by the employes of the Company in the year 1913, the expense of which amounted to $184,338.77. We
994 have heretofore disallowed the part of this expense apportioned by the Company as a capital charge, and therefore it must be charged to operations, or to some other account. It is an unusual expense and difficult of assignment. We are clear that it should not be treated as an operating charge in a rate-making case. We have considered amortizing it over a term of years, but as it is an extraordinary expense and contingent in character, we have decided it should be charged to the reserve for depreciation and contingencies, which reserve amounts to $502,453, and which, under our law, should be used for contingencies, as well as for renewals and replacements.

No testimony was introduced to fix the responsibility for the strike as between the Company and the striking employes, and we are not free from doubt as to whether the cost thereof, without regard to the Company's responsibility, should be borne by the public. It is a novel idea that in case of a strike of the employes of a public utility, regardless of who caused it, the loss from the contest must fall on the public and the employes, while the Company plays the role of a referee and incurs no liability, unless, after deducting such expense, the profits should fall below a reasonable return on the investment.

The Four and One-half Per Cent of Gross Revenues.

The Company pays annually to the American Telephone and Telegraph Company, which indirectly owns the stock of the Company, and controls its management and business affairs, 4½ per cent of its gross revenues as rent for the telephone instruments, heretofore considered and as compensation for expert advice and services rendered to it. The proportion chargeable to the
995 St. Louis exchange for 1913 is $95,129.82. In the valuation of the Company's property we have decided that the Company should own such instruments and have valued the prop-

erty upon that theory. The question remains, whether the claim for services and the amount charged therefor should be allowed. Deducting from the $95,129.82 a return of 6½ per cent on the valuation of the instruments as capitalized, the claim for services by the parent company would be $79,850.78. The American Telephone and Telegraph Company, which makes this claim, owns the stock of four subsidiary telephone companies, namely, the Southwestern Telegraph and Telephone Company (of Missouri). Missouri and Kansas Telephone Company, Pioneer Telephone and Telegraph Company and the Southwestern Telegraph and Telephone Company (of Texas).

These four companies have the same general executive officers who give their time and services to each of said companies and whose salaries are paid proportionately by each company upon a basis which need not be discussed. There are sixteen of these officers and their total salaries amount to $122,752.40, an average of $7,672 per year, the highest being $24,000, and five being $10,000 or over. The proportion charged to the Company is $26,293.78. For the sum thus paid the Company receives from the said general officers the services of the president, two vice-presidents, the chairman of the board, the legal department and the accounting department.

In addition to the foregoing, the company has heads of departments and experts who give their entire time to its service as follows:

Nine traffic supervisors, at an average salary of $2,292; four
996 commercial supervisors, at an average salary of $3,528 and thirty-seven engineers, at an average salary of 1,648, the total salaries so paid being $96,716 per year. The above list is exclusive of the large number of clerks and stenographers in the several departments.

It thus appears that the company pays annually the total sum of $123,000, in round numbers, as salaries for the service of executive officers, heads of departments and engineering staff, and now we are asked to allow an additional sum for expert advice and services of the employes and representatives of the American Telephone and Telegraph Company, which one witness for the company estimated for the year 1913 to be of the value of $302,100. There is no doubt that some service was rendered by the parent company. We have fully considered this claim, both on the theory advanced by an express contract, and of a contract implied by law, on the ground that the company having received the benefits of such services will be held to pay the reasonable value thereof, and our conclusion is that the claim cannot be justly allowed on either ground. The company has, in fact, capable, efficient and well-paid officers, and with the valuable services of the officers of the combined companies, we think it wholly unnecessary and unjustifiable to add a still further burden on the company for services of the parent company (with headquarters at New York City), which it was not free to request or refuse, and which, in our opinion, it did not need.

Depreciation.

There should be added to the above total, to be deducted from earnings, a reasonable sum for depreciation, or, as it is desig-
997 nated in our law, for surplus and contingencies. The company appropriated for the year 1913, as apportioned to the St. Louis exchange, the sum of $271,584. Deducting from the value of the property as heretofore ascertained, the large item of land, which does not depreciate, but is constantly appreciating in value, and other non-depreciable property, the sum thus set aside by the company is slightly in excess of three per cent on the remainder. The amount actually charged, as shown by the books of the company for renewals and replacements for the year 1913, for the entire property of the company was $348,222.90, $232,148.60 of which sum was chargeable to the property of the company in the St. Louis exchange. The depreciation of this plant, as estimated by Player, is between five and six per cent, and by Robinson 5.492 per cent. Upon this question the company cites in its brief the report entitled, "Telephone Service and Rates," to the City Council of Chicago, September 3, 1907, at page 116, in which the Commission said:

"I, therefore, will suggest 5½ per cent depreciation until such time as actual experience has determined such amount is too high or too low."

In view of the fact that we have in this case the actual amount paid by the company for replacements and renewals for the year 1913, and the amount set aside for depreciation by the company for the same year, we think it more reliable as a guide than estimates.

We have concluded that the sum set aside by the company, $271,-
548, is rather low and have increased it to $300,000, and we
998 have added the sum of $50,000 for contingencies, making a total of $350,000, which we consider an ample provision for surplus and contingencies, including depreciation.

Return under Present Rates.

We have ascertained the value of the property to be $8,500,000; for the year considered, 1913, the gross earnings were $2,161,445, and the gross expenses, including a reasonable sum for surplus and contingencies, $1,670,659, leaving as a return on the investment the sum of $490,786, or 5.774 per cent.

The return thus shown is based upon the actual earnings and expenses for the year 1913. However, it cannot be accepted as indicating the return to be received thereafter under existing rates, for the reason that the operating expenses were substantially increased during that year. In May, 1913, the wages of operators were advanced, based upon length of service, and on October 1st of

the same year the time of service of operators was reduced from nine to eight hours per day, thereby necessitating the employment of a large number of additional employes. The increase in operating expenses from these two causes was in effect from October 1st until the close of the year, and, so far as shown, has since so remained. Estimating the expenses for the entire year upon the basis of the three months ending December 31, 1913, we have as the estimated operating expenses for that year assignable to the St. Louis exchange, and including surplus and contingencies as above, the sum of $1,713,-
981. Upon this assumption, the net income under present rates is $447,464, or a return of 5.264 per cent, and upon this showing we conclude that the present rates do not and and will not
999 afford to the company a reasonable return upon its investment.

VII.

Proposed Rates.

The company has estimated an increase of $157,000 per year in its earnings under the pr-posed rates. Adding this sum to the earnings for the year 1913, and deducting therefrom the estimated operating expenses, including the sum allowed for depreciation, surplus and contingencies, there remains as a return the sum of $604,464, or a rate of 7.111 per cent on the value of the property.

Section 93 of the Public Service Commission Law confers power upon the Commission to fix reasonable rates for telephone service, but provides that it shall do so "with due regard, among other things, to a reasonable average return upon the value of the property actually used in the public service." The Commission is thus given power to fix reasonable rates, but not to fix the rate of return on the property. However, the right to a reasonable average return is recognized by the statute and a rate that would yield less would be void, both by the express provision of the law, as well as by constitutional guaranty. Therefore, in determining reasonable rates, the Commission must have in mind some rate of return which it regards as reasonable, and in this case considering the amount of the investment, the history of the plant and the surrounding facts and circumstances bearing upon such rate of return, we think a schedule of rates reasonable both to the company and the public should yield a
1000 net return upon the value of the property of 6.5 per cent. In considering this return reasonable, we have in mind in addition the matters above stated, the facts that it is clear of taxes or other charge; the rate of interest on loans in that locality and that the company is now paying five per cent on its notes for borrowed money; that the return thus named is not a limit, but that the Company is entitled to a return as much higher as it may be able to make the property earn, so long as the rates for service remain unchanged; while on the other hand, any change in conditions that would reduce the net earnings below a reasonable average return would avoid the rates and entitle the company upon such showing to an increase that would make the return reasonable. The company, therefore,

may lawfully earn more than a reasonable average return—it cannot be required to accept less.

Assuming the estimate of the company as to the increase in revenue from the proposed rates to be correct, we are of the opinion that the said rates are not reasonable and should not be allowed to go into effect.

The proposed rate for unlimited direct service, the business rate in general use, of $120 per year, being an increase of $42, or more than 50 per cent over the present corresponding rate, we think is not justified by the facts of this record. There are four measured service rates proposed, the charge per year being respectively, as follows: $78, $63, $45 and $39. Under the first, the number of messages allowed is 1,920, or, estimating 310 business days in the year, 6.2 messages per day; under the second, 1,320 messages, or 4.27 messages per day; under the third, 720, or 2.3 messages per day, and
1001 under the fourth, 660, 2.1 messages per day. The charge for excess messages is two cents under the $78 rate; three cents under the $63 rate, and four cents under each of the other two. As to the reasonableness of these measured rates as a whole, or relatively, compared with the proposed flat rate, we need not discuss, in view of the disposition to be made of the case.

Having reached the conclusion that the existing rates are unreasonably law and the proposed rates unreasonably high, we come to the question of determining what are reasonable rates under the facts of this case. This question we could determine with no more difficulty than ordinarily attends the fixing of rates in the other cases, if we were considering a flat rate only for unlimited service for all business telephones and assuming, as we have throughout, that the residence rates now in force are reasonable. But for the first time we have to deal with a schedule which includes measured or limited service rates, as well as a rate for unlimited service, and a readjustment of rates for each of the two classes introduces an element of much uncertainty as to the effect upon the company's revenues. We are not condemning the principle of measured service, for we think the company fully warranted in providing rates for the two classes of service, and that the wide variation in the extent of the use made of the telephone by the several business subscribers requires a lower rate for the small user, and also makes necessary different rates for measured service, according to the number of messages allowed. It is shown by an exhibit introduced in evidence by
the company that the average number of week-day calls per
1002 station by business subscribers is about sixteen, while in some cases the number exceeds two hundred, and in others, is as low as one call per day. It is apparent that the value of the telephone to a subscriber and the cost of the service to the company increases with the use thereof, and in justice to the subscribers who make the lesser use and to whom the telephone is a necessity, different rates for business service should be established. However, while approving the principle of the two classes of service rates, we realize that our knowledge of the situation as to the effect of the readjustment and increase of such rates upon the revenues of the company

is very limited compared with that of the company's officers and experts who are familiar with local conditions. Therefore, in view of these facts, we have decided to order the proposed schedule on file to be canceled and to allow a new schedule to be filed by the company, subject to the approval of the Commission, increasing the rates and the income of the company in accordance with the views herein expressed and with the terms and conditions of an order to be entered of this date.

Now, upon the evidence in these cases and after due deliberation, it is,

Ordered: 1. That the Commission, upon a full consideration of all the evidence in these cases, finds as a fact that the fair present value for determining reasonable and just rates in these cases, of all the property of the local exchanges at St. Louis, of applicant Company, including that part of the Clayton exchange known as "Hanley," giving St. Louis service, and including the transmitters, receivers and induction coils furnished by the American Telephone and Telegraph Company, as set forth in the report of the Commission filed herein and made a part of this order, as of date December 31, 1913, and used and useful by applicant Company in the service of the public, considering said plant and each class of its property as a going concern, and taking into account the fact that said plant is in successful operation, and including engineering, supervision and interest during construction, organization and general expenses, legal expenses, contingent expenses, insurance, general contractor's profit, promotion and other development expenses, working capital, and including all other elements of value, tangible, and intangible, as used in the public service in furnishing telephonic service, is the total sum of eight million five hundred thousand dollars ($8,500,000), which said sum is hereby fixed and determined by the Commission to be the fair present value of said property as of said date, for the purpose of determining reasonable and just rates in these cases.

1003 10. The Commission's Decision in the Old Springfield Rate Case:

On July 31, 1918, the Commission rendered an opinion in the old Springfield rate case to which it refers in its opinion in this case. The Commission's opinion is as follows:

1004 *Report.*

The Missouri and Kansas Telephone Company (since 1917 the Southwestern Bell Telephone Company), owning and operating the telephone exchange at Springfield, Missouri, on December 24, 1916, filed a new schedule of rates for service in the Springfield, Missouri exchange, effective April 1, 1917.

The Commission, acting upon its own initiative, entered an order on December 28, 1916 (Case No. 1141), suspending the proposed rates and charges for a period of one hundred twenty (120) days, to and including July 29, 1917, and providing for a hearing and investigation concerning the propriety and lawfulness of the proposed

rates, charges and regulations. A supplemental order was issued by the Commission on July 25, 1917, providing for a further suspension for a period of six months from July 30, 1917, to and including January 30, 1918.

By stipulation dated January 16, 1918, signed by the attorney of the Southwestern Bell Telephone Company and the City Attorney of Springfield, the operation of the proposed schedule of rates and charges was further suspended "until the Commission shall have made its final finding and order determining the reasonableness and validity of said schedule of rates and charges."

On May 14, 1917, the Commission issued its order (Case No. 1236) providing for a valuation of the property and for an inspection and examination by the engineers and accountants of the Commission of all the books and accounts of the Missouri and Kansas Telephone Company.

Cases 1141 and 1236 were consolidated by agreement. A hearing was held by three of the Commissioners at Springfield on November 1 and 2, 1917, and a further hearing was held at Jefferson City on November 26 and 27, 1917. Briefs were filed and the cases were argued before the Commission at Jefferson City on February 18, 1918.

1005 I. Present and Proposed Rates.

The present rates and the rates proposed in the schedule filed by the Missouri and Kansas Telephone Company, hereinafter designated the "company," are as follows:

	Present.	Proposed.
Individual Business	$3.00 per month	$4.50 per month
Two-party Business	2.50 per month	Discontinued
Individual Residence....	1.83 per month	$2.50 per month
Two-party Residence....	1.50 per month	2.00 per month
Desk Sets	.25 per month	Discontinued

P. B. X.

	Present.	Proposed.
Business Trunks.....	$3.00 per month	$4.50 per month
Residence Trunks	1.83 per month	2.50 per month

The Company contends that the present rates are unreasonably low and that it is justly entitled to the increased revenue to be obtained from the proposed rates; and the City of Springfield, through its City Attorney, maintains that the present rates are reasonable and just and that the proposed schedule of rates should not be approved by the Commission.

II. History of the Company.

The history of the company is given in the briefs filed and in the report of the accountants (Commission Exhibit No. 1). Suffice it to say that in January, 1917, the name of the Missouri and Kansas Telephone Company was changed to Southwestern Bell Telephone

Company; that about that time the company purchased the holdings of the Bell Telephone Company in the eastern half of
1006 Missouri, including the Bell Telephone Company's holdings in St. Louis and East St. Louis, so that the company, now owns and operates ninety-nine telephone exchanges, sixty-five in Missouri and thirty-four in Kansas, with a total capitalization of $24,636,900; that in 1915 the company operated 132, 377 telephones, of which 50.2 per cent were located in Kansas and 49.8 per cent in Missouri, and that 99.96 per cent of the stock of the company is owned by the American Telephone and Telegraph Company.

III. Springfield Exchange—General Description.

Springfield has an estimated population of 45,000. The Telephone Exchange Building is a modern three-story and basement structure of brick and steel construction, completed in November, 1912. The central office equipment is Western Electric Standard No. 1 Common Battery Switchboard, two-party selective Ringing. The switchboard is equipped with 6,400 multiple lines and 6,620 subscribers' lines and has an ultimate capacity of 9,600 multiple lines. There are approximately 7,000 telephones in use on 6,000 or more circuits. There is no complaint as to service.

IV. Valuation.

1. Original Cost.

Prior to 1911 no attempt was made to keep separate accounts of the cost of the various exchange plants owned by the Missouri and Kansas Telephone Company. It is impossible, therefore, to determine the original cost of the plant from the books of the company.

During the latter part of 1911 the Springfield exchange,
1007 together with the exchanges in Monett, Aurora, Pierce City, Marionville, Seligman and Washburn were transferred to the Missouri and Kansas Telephone Company for $500,000. The additions to the Springfield exchange during the year 1912, 1913, 1914, 1915 and 1916, amount to $328,017.22 according to Statement No. 1 in Commission's Exhibit No. 1. Counsel for the city of Springfield contends that as $500,000 was paid for the seven exchanges in 1911, and only $328,017.22 expended on the Springfield exchange since that date, the total cost of the Springfield exchange was necessarily less than the sum of these two amounts, or less than $828,017.22; and further suggests that in his opinion the sum of $700,000 correctly represents the fair present value of the Springfield exchange for rate-making purposes.

Witness Kositzky submitted an exhibit (applicant's Exhibit Za), in which the original cost of the "bare physical plant" is given as $767,299, exclusive of going value or working capital. In arriving at this figure the amount of $18,000 is added as representing the loss suffered by the contractor for the building. Such an addition might be justified in determining the reproduction cost, but certainly not in determining the original cost. The original cost,

therefore, according to this exhibit, of the bare physical property, should be taken as $750,000.

Based upon the evidence in this case and upon our general knowledge of the cost of construction, and prices of material during the period of construction, we submit the following approximate estimate of original cost of construction of the investment upon which a return should be allowed, dealing only in round approximate figures:

1. Land	$22,000
2. Buildings	55,000
3. Central Office Equipment	128,000
4. Distributing System and Substation Equipment	400,000
5. Total	$605,000
6. Overhead, including Organization, Insurance, Interest, Engineering and Contingencies, 15%	91,000
7. Furniture and Fixtures	3,000
8. Tools and Teams	7,000
9. Working Capital, including Stores and Supplies	30,000
10. Total	$736,000
11. Intangibles, including going value, 10%	74,000
Grand Total	$810,000

We do not adopt this figure as the correct amount upon which a return should be based, but merely offer the estimate as additional evidence to be considered in arriving at the valuation for rate-making purposes.

2. Reproduction Cost.

Table No. 1 herewith gives a comparison of the estimates on the cost of reproduction new.

1008 TABLE No. 1.

Reproduction Cost.

	Player for the Commission.		Kositsky for the company.
	Cost new.	Cost new, less depreciation.	cost new.
1. Land	$39,750	$39,750	$39,250
2. Buildings	72,155	68,197	79,111
3. Central Office Equipment	86,092	73,001	116,900
4. Subscribers' Equipment	86,422	75,605	64,316
5. Distribution System, Aerial	205,343	177,831	
6. Distribution System, Underground	164,147	148,713	429,991
7. Total	$653,909	$583,097	$729,568
8. Add 15%	98,086	87,164	
Contingencies			29,183
Engineering			37,938
General Expense			15,934
9. Total	$751,995	$670,261	$812,623
10. Furniture and Fixtures	2,380	1,785	2,380
11. Tools and Teams	7,026	5,269	
12. Stores and Supplies	16,468	16,468	
Taxes			4,773
Interest			49,044
General Investment			4,157
13. Total	$777,869	$693,783	$872,977
Going Value			173,288
14. Working Capital	12,795	12,795	26,818
Grand Total	$790,664	$706,598	$1,073,083
Correction as per record, page 486	23,437	19,803	
Grand Total	$814,101	$726,381	

1009 According to applicant's Exhibit No. 14, the estimated reproduction cost new of the plant at the Springfield exchange is $1,073,083. In arriving at this figure the price of copper was taken as 19½ cents per pound, "the trend average," and for other materials an average of three to five year prices were used. Going value or the "cost of establishing the business" was assumed at 20 per cent of the reproduction cost, or $173,288.

According to the Commission's engineer the estimated reproduction cost new, exclusive of going value, is $814,101, and the cost new less depreciation is $726,381. Prices for material were assumed as of July 1, 1915, except prices for poles, which were taken as of December 29, 1916.

The estimated cost is considerably increased by the high prices assumed for material and labor; the land is entered at its present value, which is considerably in excess of the original cost; the main building, which cost about $54,000, is valued at $72,000 to $79,000 in the various estimates; and the price of copper is assumed at 18 cents to 19½ cents per pound, whereas, the actual price during part of the construction period was about 13 cents per pound. All these facts will be considered in arriving at a final determination of value.

3. Determination of Value.

Having carefully considered the various estimates as presented above, and with due regard for all the estimates submitted to us, including the somewhat meager evidence as to original cost, the estimates on cost of reproduction and on cost of reproduction
1010 less depreciation, and of all other evidence submitted in this case upon the question of value of the property, the Commission concludes that the fair value of the property, both tangible and intangible, and including going value, used by the Missouri and Kansas Telephone Company in rendering telephone service at Springfield, Missouri, for rate-making purposes, as of September 30, 1916, is $815,000. This represents an investment of approximately $116 per telephone station.

V. Revenue, Expenses and Profit.

While we are concerned at this time with the profits of only the Springfield exchange, it may not be amiss to call attention to the fact that the Missouri and Kansas Telephone Company, with a cash investment of $24,636,900, has neither paid nor earned any dividends for its stockholders since 1906. Prior to 1906 dividends ranged from four to seven per cent and the "average annual dividend paid by the company during its entire life is only 1.57 per cent on the actual money invested."

The lack of sufficient earnings, and a reasonable return, is attributed to the destructive competition of the past. Regulation has taken the place of competition and will produce satisfactory results, provided the interest of the investors, as well as that of the consuming public, is fairly considered.

1. Four and one-half per cent payment.

The American Telephone and Telegraph Company, organized under the laws of the State of New York, owns 99.6 per cent of the stock of the Missouri and Kansas Telephone Company (since
1011 1917 the Southwestern Bell Telephone Company), which latter company owns and operates the Springfield exchange among 98 other exchanges in Kansas and Missouri.

In the operating expenses of the Springfield exchange there appears an item of $6,894.83 for the year 1916, being the amount paid to the American Telephone and Telegraph Company for rental of instruments and for other services. The amount so charged is by agreement 4½ per cent of certain of the gross earnings. This charge of 4½ per cent covers:

(*a*) Rental of transmitters, receivers and inductioon coils, all of which belong to the American Telephone and Telegraph Company, their cost not being included in the inventory of the Springfield exchange.

(*b*) Services in financing, engineering, legal and accounting services, and use of patents.

The value of the transmitters, receivers and induction coils in use at Springfield, as shown in company Exhibit 29, is $23,673.27, which represents $3.19 per set, for approximately 7,400 sets in use. Allowing a return of 22 per cent of the investment to cover repairs, replacements, administration, and an 8 per cent return on the investment, we find that $5,208.12 would be a proper annual rental charge for the instruments.

Deducting the rental charge as found above from the total charge of $6,894.32, we find that the allowance of $1,686.20 is made for services in financing and for engineering, legal and accounting services and use of patents. Manifestly this is a reasonable charge for the services rendered and is too small in amount to warrant extended investigation. The evidence fully sustains the charge of $6,894.83 as a proper operating charge in this case.

1012 The Commission, however, desires to disclaim any intention of approving the 4½ per cent charge in general as fair and proper. This question is at issue in Cases Nos. 234 and 235, in the matter of rate investigation and valuation of the St. Louis exchange of the Southwestern Telegraph and Telephone Company, and as it bears no important relation to the issue in the instant case, we deem it unnecessary to reach a conclusion at this time.

2. Reserve for Replacements.

Applicant's brief cites numerous cases in which tribunals have allowed from 5½ to 8 per cent for annual depreciation reserve and recites a list of causes which limit the life of various parts of the plant.

The Commission concludes that an annual allowance of six per cent of the cost of the depreciable property is justified.

3. The operating revenues, expenses and income of the Springfield exchange for the calendar years 1915 and 1916, as set forth in Commission's Exhibit No. 1, are as follows:

	1915.	1916.
Operating revenues, including "other income"	$155,653.96	$167,707.45
Operating expenses, including the 4½ per cent payment	103,405.36	107,703.53
Net return applicable to depreciation reserve, surplus and interest	52,248.60	60,003.92

The net earnings applicable to depreciation reserve, surplus and interest charges for the years 1915 and 1916 were therefore
1013 $52,249 and $60,004, respectively, representing an average of 6.9 per cent on an investment of $815,000. Estimating the depreciable property at $700,000, we are prepared to allow 6 per cent, or $42,000, to be set aside for a depreciation reserve to cover major obsolescence, leaving a net average annual return for the two years of $14,126, or 1.7 per cent for interest charges and surplus on an investment of $815,000.

The financial statement as presented by the company in Exhibit No. 38 is practically in accord with the above, except that the reserve provided for replacements is about $10,000 more than we have estimated, and therefore the net return is about $10,000 less.

It is evident from the above analysis that the company is entitled to relief and should be allowed to increase its rates and charges for telephone service.

4. Income from Proposed Rates.

If the rates proposed by the company (see "I" above) are allowed to go into effect the increased income is estimated to be approximately $42,000 per year. Assuming the same operating expenses as for 1916, the net return applicable to interest charges, after setting aside $42,000 for replacement reserve, would be $60,000, or approximately 7.4 per cent on an investment of $815,000.

VI. Conclusions.

In fixing the maximum rates of charges, during this time of national stress of universal obligation to make whatever sacrifices may be necessary to bring the world war to a successful con-
1014 clusion; of ever-increasing prices for necessary articles of consumption, we are not disposed to allow the full return which we would ordinarily consider justified. This company has heretofore survived with a meager income, considering its investment, and while the additional income asked for would, under normal conditions, be warranted, the evidence submitted does not indicate that a refusal to grant a full measure of relief at this time, is necessary to secure reasonable and proper service, or for the general public good.

After fully considering [illegible] of the evidence in this case, and with due regard to war conditions, we have come to the following conclusions:

1. That the rates and charges heretofore in effect are unreasonab low and unremunerative.

2. That the rates and charges for telephone service as propos by applicant are unreasonable, exorbitant and unfair, and that sa proposed schedule of rates shall be cancelled and withdrawn fro the files of the Commission by the applicant.

3. That applicant shall be permitted to file rates and charges n in excess of the following:

Individual business	$4.00 per month
Two-party business	Discontinued.
Individual residence	2.25 per month
Two-party residence	1.75 per month

P. B. X.:

Business trunks	$4.00 per month
Residence trunks	2.25 per month

The estimated net return to be expected from the rates herein allowed, applicable to interest charges, after setting asid
1015 $42,000 for replacement reserve, will be $39,378, or 4.8 pe cent, on an investment of $815,000.

4. As hereinbefore stated, we further find that the fair value o the property, both tangible and intangible, and including going value, used by The Missouri and Kansas Telephone Company in rendering telephone service at Springfield, Missouri, for rate-making purposes, as of September 30, 1916, is $815,000.

An order will be issued in conformity with the views herein expressed.

Order.

The Commission on December 28, 1916, having suspended the schedule of rates, charges and regulations of The Missouri and Kansas Telephone Company for its exchange at Springfield, Missouri said schedule being known as P. S. C. Mo. No. 4, Second Revised Sheet 33, effective April 1, 1917, canceling First Revised Sheet No. 33 to P. S. C. Mo. No. 4, containing rates and charges thereafter to be charged by said company at its exchange at Springfield, Missouri, said suspension being for a period of one hundred twenty (120) days, to and including July 29, 1917, and having issued its order for an inventory and appraisal of the property, and a hearing and investigation concerning the propriety and lawfulness of the proposed rates, charges and regulations having been had, a supplemental order was issued by the Commission on July 25, 1917, providing for a further suspension for a period of six months from July 30, 1917, to and including January 30, 1918. By stipulation dated January 16, 1918, it was agreed that the proposed
1016 schedule of rates and charges should be further suspended until the Commission had made its final finding and order

determining the reasonableness and validity of said proposed schedule of rates and charges.

A hearing was held before three members of the Commission at Springfield, Missouri, on November 1 and 2, 1917, and continued for additional evidence to be submitted. Additional evidence was submitted at the office of the Commission in Jefferson City on November 26th and 27th, at which time it was agreed that evidence submitted in Cases 234 and 235, bearing upon the matter of the 4½ per cent charge referred to in the report attached hereto, should be included as a part of the evidence in this case. The case thereupon was submitted to the Commission upon the evidence, briefs and arguments of counsel thereafter furnished.

After full consideration of all the evidence, briefs and arguments, and the Commission having this day made and filed its report herein containing its findings of fact and conclusions thereon, which report is hereafter referred to and made a part hereof, and after due deliberation, it is by the Commission

Ordered: 1. That the Commission finds that the rates, charges and regulations provided for in the said proposed schedule of The Missouri and Kansas Telephone Company, Springfield exchange, being its P. S. C. Mo. No. 4, Second Revised Sheet 33, cancelling P. S. C. Mo. No. 4, First Revised Sheet 33, are unreasonable and unjust and shall be cancelled and withdrawn from the files of the Commission.

Ordered: 2. That The Missouri and Kansas Telephone Company (now the Southwestern Bell Telephone Company) shall file with this Commission a schedule of rates for its Springfield exchange containing all the rates and charges set out in its proposed schedule, known as P. S. C. Mo. No. 4, Second Revised Sheet 33, with the exception of the charges as herein named for various classes of service, to-wit:

Individual Line Business	$4.50 per month.
Two-party Line Business	Discontinued.
Individual Line Residence	$2.50 per month.
Two-party Line Residence	2.00 per month.
P. B. X.:	
Business Trunks	$4.50 per month.
Residence Trunks	2.50 per month.

and shall insert in lieu thereof not to exceed the following rates for the various classes of service above named, to-wit:

Individual Line Business	$4.00 per month.
Individual Line Residence	2.25 per month.
Two-party Line Residence	1.75 per month.
P. B. X.:	
Business Trunks	$4.00 per month.
Residence Trunks	2.25 per month.

Ordered: 3. That any and all increase of rates herein authorized or permitted shall remain in effect for a period of one year only from and after the effective date of this order, at the end of which yearly period such increase of rates shall, without further order, cease and the rates of said company shall then be reduced and restored by said company to the rates now on file or charged by it: Provided, that the Commission may hereafter by further order continue such
1018 increase of rates for another or further period or otherwise change or modify the rates of said company.

Ordered: 4. That the said company be required to keep a full and accurate account of the revenues and expenses of its exchange and file a full and complete report thereof with this Commission at the expiration of said period of one year after the effective date of this order, which report shall be in addition to any other reports required by law, and that the Commission fully retain jurisdiction of the parties and subject-matter of this cause to continue, change or modify the rates of said company upon the expiration of said period of one year after the effective date of this order or at any other time upon the evidence and facts now before the Commission, together with such other evidence as the company or any interested party may offer.

Ordered: 5. That this order shall take effect on September 1, 1918, and that the Secretary of the Commission shall forthwith serve upon the parties hereto a certified copy of this order, and that the company shall, on or before the 15th day of August, 1918, notify the Commission in the manner prescribed in Section 25 of the Public Service Commission Law, whether the terms of this order are accepted and will be obeyed.

1019 11. The Commission's Decision in the Old Caruthersville rate Case.

On July 31, 1918, the Commission rendered an opinion in the old Caruthersville rate case to which it refers in its opinion in this case. The Commission's opinion is as follows:

1020 *Report of the Commission.*

Atkinson, Chairman.

I.

The Issues.

On September 2, 1913, the Southwestern Telegraph and Telephone Company, applicant herein, filed with the Commission its application for permission to establish a new schedule of rates in its exchange in the City of Caruthersville, this State, in which it set forth in substance that its present rates are $2 per month for business telephones and $1.25 per month for residence telephones; that it desires to increase its rates to $2.50 per month for business telephones, direct

line, and $1.50 per month for residence telephones, direct line, and private branch exchange trunks from $3.00 to $3.75 per month; for intercommunicating system trunks (business) from $4.00 to $5.00 per month, and intercommunicating trunks (residence) from $2.50 to $3.00 per month; that the ordinance of said City of Caruthersville provides for a business rate of $2.50 per month and a residence rate of $1.50 per month; that Caruthersville belongs to a class of cities scheduled by the applicant as Class "B," and that the proposed change of rates would make the rates at Caruthersville nearer in accord with the rates in similar cities served by applicant company. For full information the applicant referred to the classification of cities it had on file with the Commission.

The applicant further sets forth that since the purchase of the telephone system at Caruthersville it has gone to great expense
1021 in making improvements in the plant and system and has changed the same from a single wire grounded system to a full metallic system, and that the added investment and expense of improvements in the service amounted to some $8,000, and fully justified the proposed increase of rates as provided for by said ordinance.

On September 4, thereafter, the Commission issued an order suspending the proposed rates and requiring said applicant company to file with the Commission complete inventories of all its property in the Caruthersville exchange. This order suspending the operation of the proposed increase of rates has been continued from time to time either by order of the Commission or by mutual agreement between the applicant and representative of the city, and is still in effect, and the proposed rates have not yet become effective.

On November 5, thereafter, the Commission issued an order in which it set forth in substance that it is the intention of the Commission to ascertain the value of the telephone exchange of said applicant company located at Caruthersville in order that the Commission may be enabled to determine the reasonableness of the rates now being charged by said applicant and to fix reasonable maximum rates to be thereafter charged by said applicant for telephone service rendered by said exchange at Caruthersville. The order also required the company to file inventories and to submit its books for inspection to the engineers and accountants of the Commission.

The engineers and accountants for applicant company thereafter submitted in evidence before Commissioner Woerner detailed inven-
tories, appraisals and audits of the property, income and op-
1022 erating expenses of the exchange at Caruthersville. The engineers and accountants of the Commission also made an appraisal, valuation and audit of all of the properties of the exchange at Caruthersville, and the gross income and operating expenses of same, which was thereafter offered in evidence.

The cases were submitted on oral argument and briefs were filed by applicant.

II.

The Franchise Rates.

The city of Caruthersville is organized as a city of the fourth class, as provided by Section 8527, R. S. 1909. On December 4, 1899, the board of aldermen of said city passed Ordinance No. 212 granting to the Cape Girardeau Telephone Company and its assigns (one of applicant's predecessors) a franchise to construct and operate a telephone exchange in said city. By the terms of Section 2 of said ordinance, the rates were prescribed as follows: For business phones, $2.00; for residence phones, $1.00, and a combination price of $2.50 where a subscriber took one of each.

On November 7, 1904, said city passed Ordinance No. 21, which repealed Section 2 of said Ordinance No. 212, and enacted in lieu thereof a new section, which reads as follows:

"Section 2. Said company shall not charge a greater monthly rental to its subscribers than $2.50 for each business telephone and $1.50 for each residence telephone, which rates shall be deemed to include the use of the telephone by the subscriber, members of his family and his employes in the discharge of their duties as
1023 such, and shall include said exchange and all toll lines now owned and controlled by said company within the limits of Pemiscot County, Missouri; and said company shall make no greater charge to its said subscribers for services on its toll lines in Southern Missouri than it makes to the subscribers to said company's other exchanges; provided that said above named rates shall not be in effect until said telephone company shall have put into operation and maintain a long distance telephone line from Caruthersville, Mo., to Campbell, in Dunklin County, Mo., there to connect with the long distance line maintained by and with the telephone system known as the Bell Telephone System with connections to St. Louis and elsewhere, and until said company shall have put into operation and maintained in the city of Caruthersville a full metallic system of Bell telephones, such as are used by the Bell Telephone Company and its sub-licensees; and provided further, that said company shall give all of its subscribers and patrons service upon the long distance telephones of the Bell Telephone System at such rates as are fixed by said Bell Telephone Company and its sub-licensees. The above rates shall not be effective until after said telephone company shall have completed the putting in of said metallic system, and until it shall have made connection with said Bell Telephone System at the point aforesaid, and until after approval by the Board of Aldermen of said City of Caruthersville. Said telephone company upon request shall place in the business houses and residences of this city, or both, of the person applying therefor a telephone or telephones and render services upon the payment of six months' rent in
1024 advance if required. The said Cape Girardeau Telephone Company shall file its acceptance in writng within thirty (30) days after the passage and approval hereof."

On March 7, 1906, the board of aldermen of said city passed Ordinance No. 31, which was intended to repeal said Ordinance No. 21, and to insert in lieu thereof the same rates as were prescribed in Section 2 of said Ordinance No. 212. The record discloses that the ordinance was read the required number of times, and the vote on its passage was entered on the record as required by law. The record kept by the board of aldermen contains the following recital: "Ordinance No. 31 was therefore signed and approved by the mayor and attested by the city clerk." The original ordinance was not offered in evidence, neither do we find any explanation disclosing why it was not produced at the hearing. The record of the city in which it records its ordinances was introduced in evidence, which shows that said Ordinance No. 31 was not signed by the mayor, the place for the signature of the mayor appearing blank in said record, from which the certified copy filed as an exhibit was made.

Section 9369, R. S. 1909, provides the manner for the passage of an ordinance by the board of aldermen of a city of the fourth class. This section provides: "No bill shall become an ordinance until it shall have been signed by the mayor or person exercising the duties of the mayor's office, or shall have been passed over the mayor's veto as hereinafter provided."

Section 9370, id., provides how an ordinance may be passed over the mayor's veto. The view we take of this ordinance as to the city's authority to regulate rates prior to the passage of the so-called Enabling Act of 1907, makes it unnecessary for us to pass on the question of the validity of said ordinance not having been signed by the mayor.

III.

Original Cost.

On December 31, 1912, the Southwestern Telegraph and Telephone Company of Missouri, the applicant herein, took over by purchase the entire holdings of the Southeast Missouri Telephone Company, of which the Caruthersville exchange was a part. The records of the Southeast Missouri Telephone Company covering a period from March 28, 1904, to April 30, 1907, were found to be very incomplete. The records from May 1, 1907, to August 31, 1912, were kept so as to show the investment by exchanges.

On September 1, 1912, the records of said Southeast Missouri Telephone Company were transferred to the St. Louis offices of applicant company, and since that date have been kept under the supervision of the general auditor of the Southwestern Telegraph and Telephone Company, and at which time they were consolidated with the accounts of the applicant. The books of the Southwestern Telegraph and Telephone Company do not show the operations of the individual exchanges, but record only the transactions of the company as a whole. It may be well to state here that said company owns a large number

of exchanges in the eastern half — Missouri, including one in the City of St. Louis.

The minutes of the Southeast Missouri Telephone Company
1026 show that it was organized under date of March 28, 1904, and was incorporated April 14, 1904, with a capital stock of $150,000. This was increased to $300,000 at a meeting of the stockholders of said company under date of July 19, 1906. The balance sheet of the entire holdings of the Southeast Missouri Telephone Company as of December 31, 1912, which includes the exchange at Caruthersville, showed a total investment of $438,166.01. There were other working assets and treasury bonds bringing the total assets up to $471,495.40. The capital stock outstanding at that date was $287,625 and the bonded debt was $15,000. Notes payable amounted to $60,041.67. There were other small liabilities which brought the total liabilities up to $471,495.40. The capital assets at that date consisted of exchanges, lines and equipment, $213,954.91; toll lines and wires $135,208.43. The Caruthersville exchange was represented by exchange lines and equipment to the amount of $24,124.74. The books of the Southeast Missouri Telephone Company as of December 31, 1912, detailed an account called "contracts and licenses," to the amount of $77,515.95. In analyzing this account it was found to consist of items credited to capital stock which had been charged to investment in exchanges and toll lines and later credited to that account and charged to contracts and licenses, amounting to $12,622.20. Items credited to discount on stock and charged to investment in exchanges and toll lines and later credited to that account and charged to contracts and licenses, $47,293.75. Items credited to discount on stock $17,600; making a total of $77,515.95. This account was deducted by Mr. McShane, accountant for the Commission, from the total value of assets which were taken over by
1027 applicant company on December 31, 1912, as having no value.

The capital stock of the Southeast Missouri Telephone Company amounts to $287,625. The proof shows beyond dispute that a large part of said capital stock was issued by the Southeast Missouri Telephone Company for fifty per cent of its face value. The records disclose that fifty per cent of the first issue, August 1, 1904, to November 10, 1905, was charged to discount, and presumably the other fifty per cent was received in cash. From July, 1906, to March, 1907, there was further charged to discount on capital stock $43,512.50 and the balance presumably was in cash.

In April, 1911, there was a stock dividend declared of $6,400. It would thus appear that the total amount received from the sale of stock for cash by the Southeast Missouri Telephone Company was $119,112.60. There has been reserved for depreciation $55,429.55. The total capital investment of the Southeast Missouri Telephone Company was shown to be $438,166.01, and is accounted for as follows: Cash received from the sale of capital stock $150,090.30; cash received on account of notes payable $60,041.67, making a total of $210,131.97; items credited to capital stock and charged to franchises, $12,622.20; discount on capital stock transferred to contracts and licenses, $64,893.75; making a total of $287,647.92, thus

leaving a balance of $150,518.09 which must have been paid out of the earnings of the company.

The record further discloses that there were dividends paid by said company amounting to $39,596.26.

The Southwestern Telegraph and Telephone Company took over by purchase the assets and liabilities of said Southwest Missouri
1028 Telephone Company as of December 31, 1912, for which it paid $294,521.95. Thus it appears that the book value of the capital assets taken over was $438,166.01, less the contracts and license account, which did not represent any value, leaving the book value of the capital investment of said company at $360,650.06, less reserve for depreciation, $55,429.55. This gives a net value of the capital investment of said company taken over by applicant as of said date at $305,220.51. The records further disclose that the applicant company transferred the assets of the Southeast Missouri Telephone Company onto its books as of January 1, 1913, at an appraised value of $385,000. If we deduct from that amount the actual amount paid, $294,521.95, leaves an excess of the appraised value over the cost to applicant company of $90,478.05. The company's books showed that there had been paid for the capital stock of the Southeast Missouri Telephone Company the sum of $247,373.25. This included an amount of $12,892.95, which represented the interest on the amount advanced by the Missouri & Kansas Telephone Company (an allied Bell property). It appears that said Missouri & Kansas Telephone Company purchased, on behalf of the Southwestern Telegraph and Telephone Company 2,658.45 shares of the capital stock of the Southeast Missouri Telephone Company, and this was later turned over to the applicant company.

Accountant McShane's audit shows that the total book invesment in the Caruthersville exchange at December 31, 1913, amounted to $24,614.50. To this amount he added "incompleted estimates" in the sum of $7,701.71. This last item represented new con-
1029 struction not yet in service at the time the audit was made, as there was certain work necessary to the completion of same. The accountant had to begin with an unverified item of $10,000 as representing the Caruthersville exchange, as he was unable to verify same from any records obtainable. It is to be noted that the value of the Caruthersville exchange as shown by the books, as above stated, does not disclose any item for depreciation of the old plant properties.

An exhibit was submitted by applicant company showing the original plant value of the exchange at Caruthersville at September 1, 1913, before rebuilding, to be $21,337, and after rebuilding to be $27,700. We understand that the figures submitted by the company showing its book value do not show any item for depreciation of that part of the Caruthersville plant not replaced new.

IV.

Estimates of Cost of Reproduction New.

Engineer Player, for the Commission, submitted an estimate of the cost of reproduction new of the Caruthersville exchange, without depreciation, as of date February 26, 1914, as follows:

TABLE NO. 1.

Total Summary of Player's Appraisal as of February 26, 1914.

	Reproduction value, new.
A. Land	.....
B. Distributing system	$17,308
C. Buildings and miscellaneous structures	.....
D. Exchange equipment	3,054
E. General equipment	.....
F. Paving	.....
Physical plant	$20,362
Engineering and supervision 10%	2,036
Interest during construction 6%—3 months	305
	$22,703
H. Furniture and fixtures	392
Materials and supplies	1,146
Tools	196
Total	$24,437

1030 Witness Bloom, when testifying for applicant company, was asked as to the depreciated value of the exchange, and stated in reply that the estimated value of $26,419, as contained in certain exhibits submitted by the company, would represent, when depreciated, a value not to exceed $20,000 as the present value of the exchange, but that he did not consider it proper to take the present value as the basis for rate making.

Witness Stephens, plant engineer for applicant company, when testifying, stated that the replacement cost of the present plant was about seventy per cent of the cost of the plant new, or in other words, that the plant should be depreciated about thirty per cent. We understand this depreciation to be only figured on the old part of the plant left in the exchange, as this witness further testified that to consider the plant as a whole, both the old and the new equipment, as it would contain when rebuilt, that the rate of accrued depreciation should be "somewhere between fifteen and twenty per cent."

If Mr. Player's estimated appraisal of cost of reproduction new of $24,437 is depreciated twenty per cent, as testified by Witness Stephens, we find the amount of accrued depreciation would be $4,487, and that the cost of reproduction new less such accrued depreciation would be $19,550 for the Caruthersville exchange.

If we take the item of $19,603, as shown in Table 2 submitted by applicant company, as the value of the old plant retained and figure accrued depreciation of thirty per cent, as testified by Witness Bloom, it would give the sum of $5,880 as the amount of accrued depreci-

tion, and which, if taken from Mr. Player's appraisal of
1031 $24,437, would make his depreciated appraisal the sum of $18,557.

Mr. Player explained his appraisal as having been made on the theory of reproduction new without any depreciation, inasmuch as he thought that that part of the old plant still in use would render as efficient service as if new.

We find that Mr. Player's estimates of costs new, if properly depreciated according to the testimony of Witnesses Bloom and Stephens, would give an estimated value of about $19,550.

Witness Bloom, manager of applicant company, and Engineer Stephens submitted estimates of cost of reproduction new of the Caruthersville exchange, as follows:

TABLE No. 2.

The Southwestern Telegraph and Telephone Company (Missouri). Caruthersville Exchange.

Statement "B"—Plant Inventory and Appraisal.

Summary of plant inventory and appraisal.	Present plant.	Plant displaced, estimated.	Present plant retained.	New plant, estimated.	Total new plant and present plant retained.
Equipment—					
Central office equipment.	$2,935	$1,035	$1,900	$2,296	$4,196
Sub-station equipment..	6,251	1,284	4,967	1,386	6,353
Total equipment.	$1,186	$2,319	$6,867	$3,682	$10,549
Exchange Lines—					
Pole lines.....	$7,853	$851	$7,002	$838	$7,840
Aerial cable.....	4,677	3,137	1,540	6,802	8,342
Aerial wire.....	4,473	1,643	2,830	1,132	3,962
Underground conduit...	.....	....	....	300	300
Underground cable.....	.....	....	....	387	387
Right of way.....	230	....	230	....	230
Total exchange lines	$17,233	$5,631	$11,602	$9,459	$21,061
Total telephone pl't	$26,419	$7,950	$18,469	$13,141	$31,610
Miscellaneous Property—					
Supplies	$751	....	$751	....	$751
Office furn. & fixtures..	205	....	205	....	205
Tools	53	....	53	....	53
Teams and vehicles....	125	....	125	....	125
Total miscellaneous property..	$1,134	....	$1,134	....	$1,134
Total telephone plant and miscellaneous property	$27,553	$7,950	$19,603	$13,141	$32,744

The Company's valuation, as presented in Table No. 2, shows no depreciation of the old part of the plant left in the reconstruction. If it should be depreciated thirty per cent, as testified by Witness Bloom, we have the item of $5,880 as representing the depreciation, and the depreciated value of the plant $26,864.

1032

V.

A. T. & T. Co. Transmitters and Receivers.

The evidence discloses that the American Telephone and Telegraph Company owned and had in use, in the Caruthersville exchange, at the date of appraisal, 161 transmitters of the value of $1.50 each; 147 receivers of the value of $1.14 each; and 147 induction coils, No. 20, of the value of $.55 each, making the aggregate total value of $489.93.

For the reasons stated by Commissioner Kennish in the St. Louis Rate Case, these instruments will be capitalized as though owned by applicant company, and a rate of return allowed thereon.

VI.

Working Capital and All Other Values.

The Commission will also add $800 for working capital, this sum being equal to at least one-twelfth of the total gross annual income of applicant company, which we deem a reasonable amount. Any and all other values of any intangible nature will be considered as pointed out in McGregor-Noe Hardware Company v. Springfield Gas and Electric Company, 1 Mo. P. S. C. 468.

VII.

Fair Present Value.

Upon a full consideration of all the evidence introduced in this case, the Commission finds as a fact that the fair present value for determining reasonable and just rates in this case, of all the

1033 property of the local exchange at Caruthersville, of applicant company, including the transmitters, receivers and induction coils furnished by the American Telephone and Telegraph Company as hereinbefore set out, as of date February 26, 1914, used and useful by applicant company in the service of the public, considering said exchange and each class of its property as a going concern, and taking into account the fact that said exchange is in successful operation, and including engineering, supervision and interest during construction, organization and general expenses, legal expenses, contingent expenses, insurance, general contractor's profit, promotion and other development expenses, working capital, and including all other elements of values, tangible and intangible, as used in the public service in furnishing telephonic service, is the

total sum of $25,000, which said sum is hereby fixed and determined by the Commission to be the fair present value of said exchange as of said date, for the purpose of determining reasonable and just rates in this case.

VIII.

Income and Operating Account.

The corrected profit and loss account, including overhead expenses, for the year ending December 31, 1913, is shown by the report of the accountants for the Commission and the Company to be as follows:

1034 TABLE No. 3.

Corrected Profit and Loss Account, Including Overhead Expenses for the Year Ended December 31, 1913.

	Commission's corrected figures.	Company's report.	Difference.
Revenue:			
Exchange revenue	$7,383.88	$7,383.88	.....
Message tolls (25% of gross revenue)	1,269.85	1,281.65	$11.80*
Telegraph tolls (25% of gross revenue)	7.04	7.04	.....
Telegraph commissions	461.39	461.39	.....
Other telegraph charges	402.77	402.77	.....
Pole contacts at 10 cents each	.....	84.00	84.00†
Total revenue	$9,524.93	$9,620.73	$95.80
Operating Expenses:			
Maintenance expenses	$2,761.58	$2,761.58	.....
Traffic expenses	3,354.96	3,354.96	.....
Commercial expenses	1,338.68	1,338.68	.....
General and miscellaneous exp.	398.56	398.56	.....
Uncollectible accounts	62.40	62.40	.....
Taxes	155.74	151.34	$4.40‡
Rents	214.00	214.00	.....
Insurance	78.55	78.55	.....
Total operating expenses	$8,364.47	$8,360.07	$4.40
Net profit on operations	$1,160.46	$1,260.66	$100.20

*Toll receipts overstated in company's statement.
†Rental of pole contacts of toll lines. Nothing taken up on books for this.
‡Statement approximates taxes on basis from March 1, 1913, to Feb. 28, 1914. We have taken actual amount taxes paid.

	Commission's corrected figures.	Company's report.	Difference.
Add:			
Miscellaneous rent revenues..	17 56	17.56	.....
	$1,178.02	$1,278.22	$100.20
Deduct:			
License revenue 4½%.....	387.14	$387.14	.....
Depreciation	853.95	2,166.00	$1,312.05§
	$1,241.09	$2,553.14	$1,312.05
Net deficit.....	$63.07	$1,274.92	$1,211.85

Thus it is shown from the above table that there is a deficit of $63.07, according to the corrected report by the Commission's accountant, after deducting the sum of $387.14, being the license revenue of four and one-half per cent to the American Telephone and Telegraph Company, and a net income of $324.07, if we disallow the license revenue item of four and one-half per cent. The report of the Company's accountant shows a deficit of $1,274.92, after deducting $387.14, being the license revenue of four and one-half per cent to the American Telephone and Telegraph Company. If we disallow the four and one-half per cent item, the Company still has a deficit of $887.78, according to its report.

1035

We disallow the item of $387.14 for license revenue of four and one-half per cent of the total gross income to the American Telephone and Telegraph Company for the very able and convincing reasons stated by Commissioner Kennish in the St. Louis Rate Case, the evidence of which, by agreement, on this point, was to be considered in this case.

The following table is taken from statement "D," which was filed in this case by applicant company, showing the estimated increase in revenue from the proposed increased rates:

§Company estimates depreciation "before rebuilding." We have taken the actual proportion of amount reserved during 1914 applicable to Caruthersville.

TABLE No. 4.

Class of service.	Present rates. Sta.	Rate.	Annual revenue.	Proposed rates. Sta.	Rate.	Annual revenue.	Annual revenue increase.
Business direct.....	91	$24	$2,184.00	....	....	.....	.....
	25	21	525.00	115	$30	$3,450.00	.....
	4	30	120.00	....	....	.....	.....
Total business.	120	....	$2,829.00	115	....	$3,450.00	$621.00
Residence direct....	210	$15	$3,150.00	230	$18	$4,140.00	.....
	27	12	324.00	....	....	.....	.....
Residence—4-party..	....	....	.....	....	....	.....	.....
Total residence	240	....	$3,528.00	230	....	$4,140.00	$612.00
Grand total..	....	....	$6,357.00	....	....	$7,590.00	$1,233.00

1036 By adding to the net revenue of $324.07, as above found by the Commission, the estimated increase in revenue of $1,233, if the new rates as provided for in Ordinance No. 21 are permitted to become effective, we have the total net revenue of $1,557.07 per annum.

If we estimate the rate of return at seven per cent on the value of $25,000, we have the sum of $1,750 without any allowance for depreciation and contingent reserve. The estimated net return of $1,557.07 will fall short of this return by $192.93. The engineer for the Commission testified that the rate for depreciation and reserve should be at least five per cent on the value of the exchange. We think the company should be able to reduce its operating expenses of the Caruthersville exchange by prorating the salary of its local manager to the other exchanges under his supervision, as it did for the last two or three months of the year 1913. There may be other economies that may be practiced to help increase its net earnings. Its business will doubtless increase since the rebuilding of its plant, and the giving of better service.

The rates proposed to be charged, on comparison, are approximately those generally charged throughout the State in cities containing about the population of Caruthersville, and having a new exchange of the type and character of the one reconstructed in that exchange.

The cities of this State were not given the power to regulate telephone rates until the enactment of sections 9568 and 9569, R. S. 1909, by the Legislature in 1907. State ex rel. v. Missouri & Kansas Telephone Company, 189 Mo. 83; St. Louis v. Bell Telephone Company, 96 Mo. 623.

1037 Ordinance No. 21, amending section 2 of said Ordinance No. 212, was enacted on November 7, 1904, and provides for its acceptance within thirty days after its passage and approval by the telephone company, grantee therein. It is clear that this ordi-

nance was intended only as naming a contract rate, and not to become effective until accepted by the telephone company as therein provided.

It is further to be observed that the attempted passage of said Ordinance No. 31 to repeal said Ordinance No. 21, and regulate telephone rates, was on March 7, 1906, and prior to the passage of the statute authorizing cities to regulate telephone rates, other than by contract.

The proof discloses that at the date of the last hearing in these cases the Caruthersville exchange had been fully reconstructed by applicant company as provided for by said Ordinance No. 21 with a "full metallic system of Bell telephones."

It was agreed at the close of the taking of testimony by counsel for the company and the city that should the question be considered by the Commission of giving to the local subscribers of the Caruthersville exchange the additional service of the use of the toll lines in Pemiscot county to the several local exchanges located in said county for the rates proposed, then in that event additional evidence was to be offered showing the cost of giving such toll service in connection with the local subscribers of the Caruthersville exchange. We think that after an actual test of the proposed rates for one year, the Commission will be in a much better position to hear such evidence and pass upon the merits of same.

1038 The Commission will retain jurisdiction of the case for that purpose, and will permit the test of the proposed rates for a period of one year from September 1, 1915, and until otherwise ordered by the Commission, and will require monthly statements to be furnished by the company to both the Commission and the city, of its gross income and operating expenses, including all earnings from the toll charges from the Caruthersville exchange by its subscribers to all other local exchanges owned by said company in said county.

An order will be entered in conformity with the views herein expressed. All concur.

Order.

This case being at issue upon the application of said Southwestern Telegraph and Telephone Company for increase of its rates and charges, and the order of the Commission to ascertain and determine the fair present value of the telephone exchange of applicant company at Caruthersville, Missouri, due notice thereof having been given, and both of said causes having been duly heard and submitted by the parties, and full investigations of the matters and things involved having been had, and the Commission having, on the date hereof, made and filed its report containing its findings of facts and conclusions thereon, and having ascertained and determined the fair present value of said telephone exchange as herein described, which said report is hereby referred to and made a part hereof. Now, upon the evidence in these cases and after due deliberation, it is

Ordered: 1. That the Commission, upon a full consideration of all the evidence in these cases, finds as a fact that the fair
1039 present value, for determining reasonable and just rates in these cases, of all the property of the local exchange at Caruthersville of applicant company, including the transmitters, receivers, and induction coils furnished by the American Telephone and Telegraph Company, as set forth in the report of the Commission filed herein and made a part of this order, as of date February 26, 1914, and used and useful by applicant company in the service of the public, considering said plant and each class of its property as a going concern, and taking into account the fact that said plant is in successful operation, and including engineering, supervision and interest during construction, organization and general expenses, legal expenses, contingent expenses, insurance, general contractor's profit, promotion and other development expenses, working capital, and including all other elements of value, tangible and intangible, as used in the public service in furnishing telephone service, is the total sum of twenty-five thousand dollars ($25,000), which said sum is hereby fixed and determined by the Commission to be the fair present value of said property as of said date, for the purposes of determining reasonable and just rates in these cases.

Ordered: 2. That the rates and charges of said telephone company for telephone service to business and residence subscribers in its Caruthersville exchange, now on file with this Commission and in force and effect, are unreasonable and unjust and do not afford a reasonable return to said company upon the value of its property used in said service.

Ordered: 3. That the rates and charges for telephonic service, as shown in the schedule filed by the Southwestern Telegraph
1040 and Telephone Company with the Commission on September 2, 1913, to become effective October 1, 1913, and marked applicant's Exhibit "B," are reasonable and just, and said company be and it is hereby authorized to put into force and effect said rates on September 1, 1915, and to continue in force and effect for a period of one year from said September 1, 1915, and until changed or abrogated by the Commission.

Ordered: 4. That said Southwestern Telegraph and Telephone Company shall keep true and correct records of its total gross income and total gross operating expenses of its said Caruthersville exchange, including all toll charges to subscribers of said Caruthersville exchange for the use of exchanges located in said Pemiscot County, Mo., from month to month, and file a monthly balance sheet with the Commission and the mayor of said city of Caruthersville, duly verified by its manager, setting forth fully such income and operating expenses, and that said reports begin on October 1, 1915, and continue for a period of one year and until otherwise ordered by the Commission.

Ordered: 5. That the applicant company and the said city of Caruthersville be at liberty at any time after an actual test of the

rates fixed herein has been made to apply to the Commission by motion or supplemental petition, upon such proof as either may desire, and upon reasonable notice to said applicant or said city, for a modification or revision of the rates and charges prescribed herein, if found to be unreasonable or unjust to the public or said applicant company, or shall fail to provide a fair and just return on the fair present value of applicant's property as fixed herein, pro-
1041 vided that reasonable and just rates will give such fair and just return.

Ordered: 6. That this order shall take effect on August 31, 1915, and that the Secretary of the Commission forthwith serve a certified copy of this order and the opinion filed herein upon said Southwestern Telegraph and Telephone Company, the mayor of the city of Caruthersville, Missouri, and the Secretary of the Commercial Club of said city.

Ordered: 7. That said Southwestern Telegraph and Telephone Company be and it is hereby required to notify the Commission, in the manner required by section 25 of the Public Service Commission Law, on or before the 15th day of August, 1915, whether the terms of this order are accepted and will be obeyed.

1042 Division III.

The Commission's Opinion and Order.

The following is a copy of the opinions and orders of the Public Service Commission of Missouri in the case at bar:

1043 "Before the Public Service Commission of the State of Missouri.

Case No. 2121.

PUBLIC SERVICE COMMISSION OF MISSOURI

vs.

SOUTHWESTERN BELL TELEPHONE COMPANY.

(Inquiry and Investigation of Rates Charged under Order of the Postmaster General)

Report.

By the COMMISSION:

1. The Issues.

On August 1, 1918, pursuant to proclamation of the President of the United States under authority of an Act or Resolution of Congress, possession, control and operation of the telephone systems of the United States were taken over by the Postmaster General of the United States, and on the 13th day of December, 1918, the Post-

master General, by order No. 2495, authorized and required the Southwestern Bell Telephone Company (hereinafter called the Company), effective the 21st day of January, 1919, to charge certain new rates for telephone toll messages throughout the United States, including messages between points in this State; and thereafter the Postmaster General also authorized and required the Company, effective the 1st day of May, 1919 (except as to Charleston and Kirksville, effective July 1, 1919), to charge increased rates for telephone exchange service at its exchanges in sixty-five cities and towns in this State; and also on the 18th day of November, 1918, the Postmaster General, by order No. 2352, authorized and required the Company, effective the 1st day of December, 1918 to put into effect certain new installation and moving charges at its exchanges in this State.

Thereafter by an Act of Congress on July 11, 1919, the President was directed 'to return and deliver to the respective owners thereof all of the systems, lines and property taken possession of or received, operated, supervised or controlled by him under authority of said joint resolution,' and it was also provided in said act 'that the existing toll and exchange telephone rates, as established or approved by the Postmaster General on or prior to June 6, 1919, shall continue in force for a period not to exceed four months after this act takes effect, unless sooner modified or changed by the public authorities, state, municipal or otherwise—having control or jurisdiction of tolls, charges and rates or by contract or by voluntary reduction'. Said Act of Congress by its terms became effective at midnight July 31, 1919, and as a result the rates promulgated by the Postmaster
1044 General would cease at midnight November 30, 1919, unless continued in effect or modified by order of this Commission.

Thereafter on August 4, 1919, this Commission issued its order directing the Company to appear and show cause why it should be permitted to continue to charge the rates and charges for telephone service now rendered by it within this state and put into effect by the Postmaster General.

Notices of the hearing on this order were served on the Mayor of each of the cities and towns interested, the Company and a number of the cities and towns filed answer or pleas, and general hearings have been held at the office of the Commission on September 15 and 26, October 13, 27 and 28, and November 6, 1919, at which hearings a large volume of evidence was introduced, principally by the Company, touching the value of the Company's property, its revenues and expenses, and the reasonableness of the rates promulgated by the Postmaster General for it in this State. The case has also been briefed and argued by counsel for the Company and counsel for a number of the towns and cities.

We have determined by separate order to permit the Company to continue the Postmaster General's rates for long-distance messages in effect for a further test period, and have also by separate order disallowed the installation and moving charges, and will therefore fix only rates for exchange service in this report and order.

It is insisted by the Company that because of increased wages and other increased operating expenses which it is paying, the present

rates are necessary and should be continued in effect, while on the other hand it is insisted by counsel for the towns and cities that these rates are excessive and the Commission should not continue
1045 them in effect, and also that the Commission should hold separate hearings and render separate findings and orders with references to rates for the different localities or exchanges.

Because of the largely increased volume of work in other cases, as well as in these telephone cases now pending before the Commission, it has been impossible for the Commission to hold local hearings in each of the communities interested prior to November 30, 1919, and the only thing that we can do at this time is to examine the record before us and fix temporary rates for each of the exchanges.

2. Value of the Property.

The Company offered in evidence exhibits showing the value of its property in the entire State (outside the cities of Kansas City and Independence whose rates are not involved in this case), and also at forty-six of its local exchanges in the State. It shows by such exhibits that the value of the property in the entire State (and when speaking of the property in the State in this report, we mean exclusive of Kansas City and Independence), is as follows: Reproduction cost new, $35,100,471; reproduction cost new, less depreciation, $31,355,278; and cost as per books, $22,888,943. It also shows the Company's estimate of reproduction cost new, reproduction cost new less depreciation, and the prorated book cost, at each of the forty-six local exchanges mentioned.

The engineers of this Commission have made a detailed inventory and appraisal and this Commission has formally valued the Company's property at only three of its exchanges, viz.: at the City of Caruthersville, reported in re Southwestern Tel. and Tel. Company, 2 Mo. P. S. C. 492; at the City of St. Louis in cases No. 234
1046 and No. 235, as yet unreported; and at the City of Springfield, reported In re Missouri and Kansas Telephone Company, 6 Mo. P. S. C. 279, and as a result we have only the estimates and appraisals of the Company before us in relation to the value of the property at the other exchanges. We think it is clear, however, from the data at hand that the values placed by the Company upon the property are excessive and not a just basis for rate making.

The values fixed by this Commission at Caruthersville, St. Louis and Springfield in the cases above mentioned aggregate $11,003,898.00, while the Company estimates the aggregate cost of reproduction new of these plants in this case at $18,971,011.00. The ratio of the latter figure is 172.4 per cent. This percentage divided into $35,100,471.00, the Company's estimate of the aggregate cost of reproduction new of its property in Missouri in this case equals $20,350,000, which might be said to be one measure of the value of the property.

Again, the Company's estimate of the aggregate cost of reproduction new, less depreciation, of its properties at Caruthersville, St. Louis and Springfield, in this case is $16,913,673.00. The ratio of

this figure to the aggregate value fixed by the Commission at these exchanges, plus additions reported by the Company, is 153.7 per cent. This percentage divided into $31,355,278.00, the Company's estimate of the aggregate cost of reproduction new, less depreciation, of its property in Missouri in this case, equals $20,400,000.00, which may be said to be another measure of the value of the property.

The Company also shows by Exhibits 19 and 212 that its return under the Postmaster General's rates on $22,888,943.00, the
1047 book value of its property in the State, is at the rate of 11.65 per cent per annum for depreciation and return on the investment which would yield the Company 6 per cent for depreciation and 5.65 per cent for return on the book cost of the property. As stated, however, we do not think that the book cost or the 'prorated book cost' of the property as claimed by the Company would be a fair basis for rate making.

As we understand it, the 'prorated book cost' given in evidence by the Company for the various exchanges is simply the percentage relation of reproduction cost new which the original cost of all property bears to reproduction cost new of all property and in individual instances the actual cost might vary greatly, either up or down, from what an appraisal would show. If the Company, to eliminate competition, paid a price in excess of the value or because of discouraged local operation were enabled to purchase a plant far below its actual value, the 'prorated book cost' basis would not reflect anything like the original cost.

We also think that the figure of $22,888,943.00, claimed by the Company to represent the book cost or original cost of its property in the State, is subject to certain adjustments with reference to the amount of non-useful property included, working capital, and the amount to be deducted account extinguished value recouped from patrons by charges to depreciation.

In the St. Louis Case, supra, the original cost of the non-useful property deducted and disallowed by the Commission amounted to $454,689.16. It appears from the Company's Exhibit 256 that the prorated book cost of the St. Louis exchange is just about half of that given for the State. However, it is clear that the pro-
1048 portion of non-used and non-useful property in St. Louis bears a much larger percentage relation to useful property than would obtain throughout the State. It would appear that estimating the Company's property not used and useful for the entire State at $500,000.00 would be a fair approximation. This sum at least should be deducted.

Working capital for the property in the State is estimated by the company at $1,051,184.00. It appears from the company's Exhibit 23 that the amount of working capital allowed by this Commission in the St. Louis case, supra, equaled 14.7 per cent of the total gross annual revenue and this percentage is used by the company in fixing working capital for the St. Louis exchange in this case. If we apply this same percentage, viz., 14.7 per cent, to the total gross revenue for the State as indicated by the company's Exhibit 20, we have:

Total operating revenue, 4 months	$2,343,924.00
Equivalent to annual figure of	7,031,722.00
and 14.7 per cent equals	1,033,670.48

This is $17,513.52 less than the working capital shown on company's Exhibit No. 19.

The depreciation reserve applicable to the Missouri property is not shown by the company. However, on the company's Exhibit 15, the balance sheet as of June 30, 1919, of the Southwestern Bell Telephone Company (Missouri corporation) operating in Missouri, Kansas and Arkansas, the reserve for accrued depreciation and reserve for amortization of intangibles is given as $7,963,082.37. The same exhibit shows the original cost of fixed capital for Missouri, Kansas and Arkansas property as $46,061,162.76. The total fixed capital of the Missouri property shown on the company's Exhibit 19 is
1049 $21,837,759.00, which is 47.4 per cent of $46,061,162.76 and 47.4 per cent of the reserve for depreciation, $7,963,082.37 equals $3,774,501.00, or the portion assignable to the Missouri property.

Adjusting in accordance with the above, we have:

Total plant and equipment, including working capital, as per company's Exhibit No. 19		$22,888,943.00
Deduct property not used or useful	$500,000.00	
Deduct excess working capital	17,513.52	
Deduct depreciation reserve	3,774,501.00	
		4,292,014.52
		$18,596,928.48
Add for intangibles, 10 per cent		1,859,692.85
Total adjusted original cost		$20,456,621.33

After carefully considering all the evidence as to values before us in this case, we are of the opinion that the value of the company's property in the State, exclusive of Kansas City and Independence, devoted to exchange service, will not exceed the sum of $20,400,000.00, and we will tentatively adopt this sum as the value of the property for the purposes of this case. As stated supra, this Commission has formally valued only a part of this property and we should not be understood as authoritatively fixing the value of the property at this time.

3. Revenues and Expenses.

It appears from the Company's Exhibits 19, 20 and 212, that its net profit on operations, available for depreciation and return
1050 on the investment, on its exchange property in the State, outside of Kansas City and Independence, for the months of May, June, July and August, 1919, amounted to the sum of $889,023.00, which is equivalent to an annual return of $2,667,069.00.

and which would amount to a return of 11.65 per cent per annum for depreciation and return on the book value or original cost of $22,888,943 claimed by the company.

We are of the opinion, however, that the net profit on operations as shown on said Exhibits 19, 20 and 212 is subject to adjustment with reference to the proportion of the 4½ per cent allowance paid to the American Tel. and Tel. Company and with reference to toll revenues and the strike expense.

In the St. Louis case, supra, this Commission did not allow the 4½ per cent of gross revenue paid by the Company to the parent company, the American Tel. and Tel. Company, as rentals on receivers, transmitters and induction coils and for alleged valuable services rendered, but did allow the company to capitalize these instruments. It appears from the evidence in the St. Louis case that by capitalizing these instruments, allowing for repairs, and granting a 10 per cent rate of depreciation on the instruments, the cost to the company would be 55 per cent less than the 4½ per cent allowance on gross revenue.

The Company's Exhibit 20, which details the makeup of the $889,023.00 available for depreciation and return on the investment, shows that the 4½ per cent of gross revenue paid by the Company amounted to $105,484.00 for the four months, or equivalent to an annual figure of $316,452.00. Fifty-five per cent of this sum
1051 would be $174,048.60, which should be added to the above figure of $2,667,069.00.

Since the rates in the St. Louis case, supra, were put in for a test period, the Commission has not considered its decision therein with reference to the 4½ per cent payment final and has intended to more fully view the cases involving such question, but as yet have not been able to do so. However, we have concluded to adhere to our decision therein for the purpose of temporary rates in this case.

The annual increase in toll revenue under the Postmaster General's rates was estimated by Mr. Hale at $100,000.00 per annum for the Missouri property. Mr. Barry estimated that under conditions prevailing after the classified toll rate schedule was effective, with 21 per cent of traffic on station to station basis, the increase would be $116,500.00 per year, but that by the end of the year when it is estimated that the station to station basis will be 40 per cent, the increase will be about $63,500.00. As the increase in station to station basis is conjectural and as under present conditions Mr. Barry's estimate is $116,500.00, it appears that the $100,000.00 figure of Mr. Hale is reasonable. An increase of $100,000.00 per year means $8,333.33⅓ per month, and as the four months taken as a base upon which to estimate the year's results contain only 2½ months of the toll increase, there should be added 1½ times $8,333.33⅓, or $12,500.00 to cover the 1½ months omitted from the four months' period, and this sum $12,500.00 multiplied by 3 to annualize it, gives $37,500.00, which should be added to the year's net profit on operations as shown.

The strike expense mentioned on exhibits refers to the strike

started in St. Louis about June 27, 1919. Mr. Scott, auditor
1052 for the company, furnished the information that this expense amounted to $250,000.00 during the four months' period. It appears that this $250,000.00 should be amortized over a period of five years. This would be $50,000.00 per year, which should be deducted from the net profit on operation as shown by the company.

The revenues for the four months' period contain the increased revenue due to installation and kindred charges. These, according to Mr. Barry, approximate $118,014.00 per year, based on seven months' actual figures (see Exhibit 82).

Adjusting the net profit on operations in line with foregoing suggestions, we have:

Company's figure (4 months, $889,023.00 per year)	$2,667,069.00
Add account adjustments of 4½ per cent payment	174,048.60
Adjust toll to show year's results.....	37,500.00
	$2,878,617.60
Deduct year's proportion of strike expenses.....	50,000.00
Estimated annual net profit on operations.....	$2,828,617.60

This figure, divided by the tentative fair present value of $20,400,000.00, leaves 13.9 per cent per annum available for depreciation, return, surplus and contingencies under the rates of the Postmaster General. After deducting six per cent for depreciation there remains 7.9 per cent available for return, surplus and contingencies.

1053 4. Reasonable Rates.

Section 93 of the Public Service Commission Act, in prescribing the duties and powers of the Commission in fixing rates, provides that:

"Whenever the Commission shall be of the opinion, after a hearing had upon its own motion, or upon a complaint that the rates * * * collected by any telephone corporation * * * are unjust, unreasonable, * * * the Commission shall, with due regard, among other things, to a reasonable average return upon the value of the property actually used in the public service and of the necessity of making reservation out of income for surplus and contingencies, determine the just and reasonable rates, charges and rentals to be thereafter observed and in force as the maximum. * * *"

In view of the fact, among others, that the company's net profit on operations for its exchange service in the State under the Postmaster General's rates amounts to 13.9 per cent per annum for depreciation and return, we find that the company's present rates for said service are unjust and unreasonable, and we have proceeded to determine and fix what we consider just and reasonable rates for

each of the company's exchanges in the State, outside of Kansas City and Independence, under all of the existing conditions. In order to avoid repetition, we have specified the rates so fixed for each exchange in the order alone and not in this report.

We have also specified in the order the amount of the reduction in the revenue of the company, per annum, resulting from our readjustment of the Postmaster General's rates at a number of the company's exchanges, and it will be found that the aggregate amount of the reductions at all of the exchanges where re-
1054 ductions were made will amount to $91,194.30 per annum.

We have also issued an order simultaneously herewith in cases No. 2121, No. 2128, No. 2129, No. 2130, No. 2131, No. 2132, No. 2133, No. 2134, No. 2135, No. 2136 and No. 2149, disallowing the installation and moving charges promulgated by the Postmaster General and we estimate that the disallowance of these rates will reduce the revenue of the Southwestern Bell Telephone Company in the sum of approximately $118,000.00 per annum.

After deducting the reductions in exchange rates in the sum of $91,194.30 and the loss of the installation and moving charges in the sum of $118,000.00 from $2,828,617.60, the company's net annual profit on operations for depreciation and return, there is left the sum of $2,619,423.30 for depreciation and return, or 6 per cent per annum for depreciation and 6.81 per cent per annum for return, on the tentative value of $20,400,000.

We will a-so put in the rates for a temporary period of thirteen months from the effective date of the order, unless otherwise ordered, with the provision that the rates of the company for exchange service at each of its exchanges in the State shall be reduced and restored by the company to the rates for such exchange service on file and charged by it on April 30, 1919, with the further provision that the Commission may by order at any time hereafter continue the rates fixed herein for another or further period or otherwise change or modify the said rates of the company.

An order will issue accordingly."

Busby, Chairman, and Bean, Blair and Flad, CC., concur; Simpson, C., dissents."

1055 Pursuant to the foregoing opinion, the Commission entered the following order:

"*Order.*

This case being at issue upon the order of the Commission and pleadings of the parties, and hearings having been duly held herein, and the Commission having on the date hereof filed its report, containing its findings and conclusions thereon which report is hereby referred to and made part hereof,

It Is, Therefore,

Ordered: 1. That the Southwestern Bell Telephone Company be authorized and permitted to continue to charge and collect for the

temporary period of thirteen months specified herein, unless hereafter otherwise ordered by the Commission, all the rates for telephone exchange service as authorized and required by the Postmaster General of the United States at its exchanges at the sixty-five cities or towns in this State hereinafter named, excepting where the Commission has herein reduced said rates prescribed by the Postmaster General, which reductions are also hereinafter specified, and which reduced rates may also be charged and collected by said Southwestern Bell Telephone Company during said temporary period of thirteen months unless hereafter otherwise ordered by the Commission.

Ordered: 2. That the reductions ordered herein as above mentioned in the rates prescribed by the Postmaster General are as follows:

1056

Exchange.	Class of service.	Direct line.	2 party.	4 party.
Armstrong, Mo.....	Business (P. M. General)...	$2.50	....	....
	" (Reduced rates)...	2.00	....	....
	Estimated amount of reduction in revenue, per annum, $132.00.			
Aurora, Mo.....	No change.			
Benton, Mo.....	Business (P. M. General)...	2.50	....	....
	" (Reduced rates)...	2.25	....	....
	Estimated amount of reduction in revenue, per annum, $66.00.			
Bismarck, Mo.....	Business (P. M. General)...	2.50	....	....
	" (Reduced rates)...	2.25	....	....
	Residence (P. M. General)...	1.50	....	....
	" (Reduced rates)...	1.25	....	....
	Estimated amount of reduction in revenue, per annum, $282.00.			
Bloomfield, Mo.....	Business (P. M. General)...	2.50	....	....
	" (Reduced rates)...	2.25	....	....
	Residence (P. M. General)...	1.50	....	....
	" (Reduced rates)...	1.25	....	....
	Estimated amount of reduction in revenue, per annum, $449.00.			
Blue Springs, Mo...	Business (P. M. General)...	2.50	....	....
	" (Reduced rates)...	2.25	....	....
	Estimated amount of reduction in revenue, per annum, $66.00.			
Brookfield, Mo.....	Business (P. M. General)...	$3.50	....	....
	" (Reduced rates)...	3.00	....	....
	Estimated amount of reduction in revenue, per annum, $990.00.			
Campbell, Mo.....	Business (P. M. General)...	2.75	....	....
	" (Reduced rates)...	2.50	....	....
	Residence (P. M. General)...	1.75	....	....
	" (Reduced rates)...	1.50	....	....
	Estimated amount of reduction in revenue, per annum, $271.50.			

Exchange.	Class of service.	Direct line.	2-party.	4-party.
Carrollton, Mo.....	Business (P. M. General)...	3.50	....	....
	" (Reduced rates)...	2.75	....	....
	Residence (P. M. General)...	2.00	1.75	....
	" (Reduced rates)...	1.75	1.50	....
	Estimated amount of reduction in revenue, per annum, $3,048.00.			
Caruthersville, Mo..	No change.			
Chaffee, Mo.....	No change.			
1057				
Charleston, Mo.....	No change.			
Chillicothe, Mo.....	Business (P. M. General)...	4.00	....	....
	" (Reduced rates)...	3.25	....	....
	Estimated amount of reduction in revenue, per annum, $2,367.00.			
Clarkton, Mo.....	Business (P. M. General)...	2.50	....	....
	" (Reduced rates)...	2.25	....	....
	Estimated amount of reduction in revenue, per annum, $126.00.			
Clayton, Mo.....	Business (P. M. General)...	3.50	....	....
	" (Reduced rates)...	3.25	....	....
	Estimated amount of reduction in revenue, per annum, $237.00.			
Dexter, Mo.....	Business (P. M. General)...	2.75	....	....
	" (Reduced rates)...	2.50	....	....
	Residence (P. M. General)...	1.75	....	....
	" (Reduced rates)...	1.50	....	....
	Estimated amount of reduction in revenue, per annum, $855.00.			
East Prairie, Mo....	Business (P. M. General)...	$2.50	....	....
	" (Reduced rates)...	2.25	....	....
	Residence (P. M. General)...	1.50	....	.. .
	" (Reduced rates)...	1.25	....	....
	Estimated amount of reduction in revenue, per annum, $282.00.			
Essex, Mo.....	Business (P. M. General)...	2.50	....	....
	" (Reduced rates)...	2.25	....	....
	Estimated amount of reduction in revenue, per annum, $63.00.			
Eureka, Mo.....	Business (P. M. General)...	2.50	....	....
	" (Reduced rates)...	2.25	....	....
	Estimated amount of reduction in revenue, per annum, $63.00.			
Fayette, Mo.....	No change.			
Ferguson, Mo.....	No change.			
Glasgow, Mo.....	Business (P. M. General)...	2.75	....	....
	" (Reduced rates)...	2.50	....	....
	Residence (P. M. General)...	1.75	....	....
	" (Reduced rates)...	1.50	....	....
	Estimated amount of reduction in revenue, per annum, $408.60.			

Exchange.	Class of service.	Direct line.	2-party.	4-party.
Glenwood, Mo.....	No change.			
1058				
Grain Valley, Mo....	Business (P. M. General)...	$2.50	....	....
	" (Reduced rates)...	2.00	....	....
	Estimated amount of reduction in revenue, per annum, $84.00.			
Greenwood, Mo.....	No change.			
Hayti, Mo.....	Business (P. M. General)...	2.50	....	....
	" (Reduced rates)...	2.25	....	....
	Residence (P. M. General)...	1.50	....	....
	" (Reduced rates)...	1.25	....	....
	Estimated amount of reduction in revenue, per annum, $276.00.			
Hannibal, Mo.....	Business (P. M. General)...	4.50	....	....
	" (Reduced rates)...	4.00	....	....
	Residence (P. M. General)...	2.50	$2.00	....
	" (Reduced rates)...	2.25	1.75	....
	Estimated amount of reduction in revenue, per annum, $9,121.00.			
Higbee, Mo.....	Business (P. M. General)...	2.50	....	....
	" (Reduced rates)...	2.25	....	....
	Residence (P. M. General)...	1.50	....	....
	" (Reduced rates)...	1.25	....	....
	Estimated amount of reduction in revenue, per annum, $321.00.			
Hornersville, Mo....	Business (P. M. General)...	2.50	....	....
	" (Reduced rates)...	2.25	....	....
	Residence (P. M. General)...	1.50	....	....
	" (Reduced rates)...	1.25	....	....
	Estimated amount of reduction in revenue, per annum, $147.00.			
Kirksville, Mo.....	No change.			
Lamar, Mo.....	No change.			
Lancaster, Mo.....	No change.			
Lees Summit.....	Business (P. M. General)...	3.00	....	....
	" (Reduced rates)...	2.50	....	....
	Residence (P. B. General)...	2.00	$1.50	....
	" (Reduced rates)...	1.75	1.25	....
	Estimated amount of reduction in revenue, per annum, $1,365.00.			
Lilbourn, Mo.....	Business (P. M. General)...	2.50	....	....
	" (Reduced rates)...	2.25	....	....
	Estimated amount of reduction in revenue, per annum, $54.00.			
Malden, Mo.....	No change.			
1059				
Marceline, Mo.....	Residence (P. M. General)...	$1.75	$7.50	....
	" (Reduced rates)...	1.50	1.25	....
	Estimated amount of reduction in revenue, per annum, $1,494.00.			

Exchange.	Class of service.	Direct line.	2-party.	4-party.
Marionville, Mo.....	No change.			
Marshall, Mo.....	Business (P. M. General)...	3.50	....	....
	" (Reduced rates)...	3.00	....	....
	Estimated amount of reduction in revenue, per annum, $1,386.00.			
Mexico, Mo.....	No change.			
Moberly, Mo.....	Business (P. M. General)...	4.00	....	....
	" (Reduced rates)...	3.50	....	....
	Residence (P. M. General)...	2.25	2.00	....
	" (Reduced rates)...	2.00	1.75	....
	Estimated amount of reduction in revenue, per annum, $6,522.00.			
Monett, Mo.....	No change.			
Neosho, Mo.....	No change.			
Noel, Mo.....	Business (P. M. General)...	2.50	....	....
	" (Reduced rates)...	2.00	....	....
	Estimated amount of reduction in revenue, per annum, $78.00.			
Oran, Mo.....	Business (P. M. General)...	2.50	....	....
	" (Reduced rates)...	2.25	....	....
	Estimated amount of reduction in revenue, per annum, $96.00.			
Peirce City, Mo.....	No change.			
Poplar Bluff, Mo....	Business (P. M. General)...	4.00	....	....
	" (Reduced rates)...	3.25	....	....
	Estimated amount of reduction in revenue, per annum, $2,314.00.			
Portageville, Mo....	No change.			
Republic, Mo.....	No change.			
St. Clair, Mo.....	Business (P. M. General)...	2.50	....	....
	" (Reduced rates)...	2.25	....	....
	Estimated amount of reduction in revenue, per annum, $72.00.			
St. Joseph, Mo.....	Business (P. M. General)...	6.50	5.00	....
	" (Reduced rates)...	6.00	4.75	....
	Estimated amount of reduction in revenue, per annum, $11,496.00.			
1002				
St. Louis, Mo.....	Business (P. M. General)...	$9.00	$9.00	....
	" (Reduced rates)...	8.50	....	....
	Estimated amount of reduction in revenue, per annum, $31,818.00.			
Sedalia, Mo.....	Business (P. M. General)...	4.00	$3.50	....
	" (Reduced rates)...	3.50	3.00	....
	Estimated amount of reduction in revenue, per annum, $3,206.00.			
Seligman, Mo.....	No change.			
Senath, Mo.....	Business (P. M. General)...	2.50	....	....
	" (Reduced rates)...	2.25	....	....
	Residence (P. M. General)...	1.50	....	....
	" (Reduced rates)...	1.25	....	....
	Estimated amount of reduction in revenue, per annum, $414.00.			

Exchange.	Class of service.	Direct line.	2-party.	4-party.
Sikeston, Mo.....	Business (P. M. General)...	3.50	....	....
	" (Reduced rates)...	3.00	....	....
	Estimated amount of reduction in revenue, per annum, $828.00.			
Slater, Mo.....	No change.			
Smithville, Mo.....	Business (P. M. General)...	2.50	....	....
	" (Reduced rates)...	2.25	....	....
	Residence (P. M. General)...	1.75	....	....
	" (Reduced rates)...	1.50	....	....
	Estimated amount of reduction in revenue, per annum, $285.00.			
Southwest City, Mo.	Business (P. M. General)...	2.50	....	....
	" (Reduced rates)...	2.00	....	....
	Estimated amount of reduction in revenue, per annum, $126.00.			
Springfield, Mo.....	Business (P. M. General)...	5.50	....	....
	" (Reduced rates)...	5.00	....	....
	Estimated amount of reduction in revenue, per annum, $7,596.00.			
Stanberry, Mo.....	Business (P. M. General)...	2.75	....	....
	" (Reduced rates)...	2.50	....	....
	Estimated amount of reduction in revenue, per annum, $222.00.			
1061				
Trenton, Mo.....	Business (P. M. General)...	$3.50	....	....
	" (Reduced rates)...	3.00	....	....
	Estimated amount of reduction in revenue, per annum, $1,176.00.			
Valley Park, Mo....	No change.			
Washburn, Mo.....	Business (P. M. General)...	2.50	....	....
	" (Reduced rates)...	2.00	....	....
	Estimated amount of reduction in revenue, per annum, $24.00.			
Webster Groves, Mo.	Business (P. M. General)...	4.50	$4.00	....
	" (Reduced rates)...	4.25	3.75	....
	Estimated amount of reduction in revenue, per annum, $870.00.			
Wentworth, Mo.....	Business (P. M. General)...	2.50	....	....
	" (Reduced rates)...	2.00	....	....
	Estimated amount of reduction in revenue, per annum, $66.00.			

1062. Aggregate amount of reduction in revenue, per annum, at all of the above exchanges where reductions have been made herein, $91,194.30.

The above words 'Business (P. M. General)' refer to the rates promulgated by the Postmaster General; the above words 'Reduced Rates' refer to the reductions made by the Commission herein in the rates of the Postmaster General; and the rates specified above refer to monthly rates at the respective exchanges.

Ordered: 3. That the Southwestern Bell Telephone Company be permitted to put into effect on December 1, 1919, the schedules of exchange rates fixed in this order, and may file with the Commission on or before January 1, 1920, schedules containing said rates applicable to its respective exchanges, to be effective under the following terms and conditions.

Ordered: 4. That said rates fixed in this order for exchange service shall be and remain in effect for a temporary period of thirteen months from and after December 1, 1919, at the end of which period such rates shall, without further order of the Commission, cease, and the rates for said service shall then be reduced and restored by the Southwestern Bell Telephone Company to the rates on file and charged by it for such exchange service on April 30, 1919; provided that the Commission may hereafter at any time by further order continue the said rates fixed herein for another or further period or otherwise change or modify the rates of said Company for such service.

Ordered: 5. That the Southwestern Bell Telephone Company be required to keep a full and accurate account of the revenue received by it for exchange service at each of its exchanges named in this order together with its expenses incurred in relation thereto
1963 for a period of twelve months from December 1, 1919, and file a verified report of said revenues and expenses with the Commission at the expiration of one year from December 1, 1919, which report shall be in addition to any other reports required by law; and that the Commission fully retain jurisdiction of the parties and subject matter of this cause, to continue, change or modify the rates fixed in this order upon the expiration of said period of thirteen months, or at any other time hereafter, upon the evidence and facts now before the Commission, or such other evidence as said Commission or any interested parties may offer.

Ordered: 6. That this order shall take effect on December 1, 1919, and that the secretary of the Commission forthwith serve upon parties hereto, a certified copy of this order, and that the Southwestern Bell Telephone Company shall notify the Commission within ten days after receiving copy of this order in the manner required by Section 5 of the Public Service Commission Act whether the terms of this order are accepted and will be obeyed."

Simultaneously with the entering and filing of the foregoing report, opinion and orders, the Commission handed down the following report and order in cause 2121 (and the same order in some other cases), relating to certain charges which the Southwestern Company was, on the 26th day of November, 1919, making for installations, removals, etc.:

Report and Order.

"By the COMMISSION:

The Commission having heretofore entered orders in Cases
1064 Nos. 2121, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136 and 2149, requiring the telephone companies named as defendants therein, as set forth in the foregoing caption of this report and order, to appear and show cause to this Commission, if any, why they should be permitted to continue to collect and receive within this State the charges authorized by the Postmaster General of the United States by his Order No. 2352, effective on the 1st day of December, 1918, providing for charges for service connection and move charges, which said charges were continued in effect by Act of Congress until the 1st day of December, 1919. Said cases were duly heard together and submitted for decision. The ruling of the Commission upon the propriety of continuing in force the charges for service connection and move charges as prescribed by the Postmaster General beyond the 1st day of December, 1919, follows. The charges for telephone service under consideration here will be divided for convenience into two classes: (1) Charges for service connections; (2) charges for moves and changes. The charges now in force for service connections, as fixed by the Postmaster General, effective the 1st day of December, 1918, are as follows:

1. For individual and party line service $3.50
2. For each extension station connected with any class of telephone service 3.50
3. For private branch exchange service the charge for establishing service connection:
   (*a*) For each trunk line connecting the Private Branch Exchange with a central office..... 3.50
1065 (*b*) For each telephone connected to the Private Branch Exchange, except operators' telephone sets 3.50
4. To cover directory, account circuit and switchboard expenses in cases where service is established by the use of instrumentalities already in place in the subscribers' premises and no change is made in the type or location of such instrumentalities 1.50

The Charges for moves and changes are so follows:

1. Charges for changes of location of telephone equipment or wiring on the subscribers' premises on and after December 1, 1918, to be:
   (*a*) For moving a telephone set from one location to another on the same premises, a charge of... 3.00
   (*b*) For moving any other equipment or wiring from one location to another on the same premises, a charge based on the cost of labor and material.

2. Charges for changes other than moves, in wiring and equipment on the subscribers' premises, made on the initiative of the subscriber, to be:

(*a*) For change in type or style of telephone set, a charge of 3.00

1066 (*b*) For other changes in equipment or wiring, a charge based on the cost of labor and material.

3. The charges specified above not to apply if the changes or moves are required for the proper maintenance of the equipment or service.

4. The charges specified above not to apply if the changes are required because of a change in the class or grade of service.

5. The charges specified above in no case to exceed the service connection charge applicable to the entire service of the particular subscriber.

Service-connection Charge.

The propriety of continuing this service connection charge will be considered first. The service connection charges are levied against all new subscribers for telephone service in addition to the regular monthly exchange rates paid by all subscribers for telephone service, and the service connection charge as provided must be paid before telephone service will be furnished to new subscribers. The amount of the charge is $3.50, excepting in cases where there is no change made in equipment upon the subscriber's premises; then it is $1.50.

The service connection charge is rested upon the theory that a large number of telephone subscribers use the service for a short time, and that in addition to the usual exchange rates paid by all subscribers for telephone service the new subscribers should pay additional charges towards reimbursing the company for the

1067 cost incurred in putting in and taking out telephone equipment to meet the needs of the short-time users.

The Commission holds that the service connection charges as authorized by the Postmaster-General should be discontinued entirely. The ruling of the Commission in the case of Simms v. Columbia Telephone Company, 2 Mo. P. S. C. 256, which was affirmed by the Supreme Court, State ex rel. v. Atkinson, 271 Mo. 36, 37, is invoked against it.

The service connection charge is unreasonable and constitutes unlawful discrimination against the new subscribers for telephone service.

A telephone company is required by law to furnish the wires and instruments necessary to accommodate its patrons and is entitled to add the cost thereof to its plant account, upon which it is entitled to earn a fair return, and should not be permitted to shift any part of that burden to telephone subscribers by means of a charge against new subscribers as now provided.

The charges now in force apply to all new subscribers, regardless

of whether they become users of the service for a short or a long time. In the case of Bradford v. Citizens Telephone Company, 161 Mich. 385, the Court said:

'While it is probably true that the cost of operating a telephone exchange increases with the increased volume of business, it is equally true that the whole body of subscribers, whether new or old, makes the added expense, and reaps the added benefit. A telephone exchange with 1,000 members is manifestly more valuable to every subscriber than one with 100 members, but it is equally valu-
1068 able to each members in the same class, and its value to the subscriber does not depend, in any degree, upon whether he is a new subscriber or an old one. It is difficult to understand why new subscribers should pay any more for the right to talk to old members than the latter do for the right to talk to new ones.'

The cost to the telephone company for serving a new subscriber for long-time service is not greater than the cost of serving an old subscriber for long-time service, yet under the service connection charge the new subscriber who continues the service will pay a higher rate for the same service than the old subscriber will pay.

The service connection charge as now in effect requires the new subscribers for telephone service to pay more for the same service than is paid by the subscribers who began to take service before the service connection charge was put in force, hence, the service connection charge is an unlawful discrimination against the new subscribers. (Subsections 2 and 3, Section 87, P. S. C. L.)

For the reasons set out above this Commission holds that the service connection charge should be discontinued on and after the 1st day of December, 1919.

Charges for Moves and Changes.

Before the Federal control of telephone companies was inaugurated a large number of such companies had filed with the Commission schedules of rates containing charges for the kind of work embraced in the Federal charges for moves and changes. If the Federal charges are not authorized by the Commission, the charges for
1069 moves and changes as heretofore filed with the Commission will become effective on the 1st day of December, 1919. The cost of moves and changes of telephone is not uniform in each locality. The Commission will not approve any sum as a standard to be applied to all companies for moves and changes and will not sanction a continuance of the Federal rates for moves and changes. Telephone companies desiring to begin such charges may seek to do so by appropriate proceedings for that purpose.

Accordingly, it is

Ordered: 1. That the Southwestern Bell Telephone Company, Case No. 2121; the Cass County Telephone Company, Case No. 2128; the Missouri Central Telephone Company, Case No. 2129; The Boonville Telephone Company, Case No. 2130; the Buffum Telephone

Company, Case No. 2131; the Pattonsburg Home Telephone Company, Case No. 2132; the Kansas City Long Distance Telephone Company, Case No. 2133; the Kansas City Telephone Company, Case No. 2134; the Home Telephone Company of Joplin, Case No. 2135; the Kinloch Telephone Company, the Kinloch Long Distance Telephone Company of Missouri, the Suburban Telephone Company, the Sedalia Home Telephone Company, Case No. 2136; the Commercial Telephone Company, Case No. 2149, have failed to show good cause to this Commission for the continuance in force and effect of the charges prescribed by the Postmaster General by his Order No. 2352 for service connections and moves of telephones, and said telephone companies as named above in section No. 1 of this order are hereby directed to discontinue such charges for service connections and moves of telephones within this State on and after the 1st day of December, 1919.

1070 Ordered: 2. That this report and order shall be in full force and effect on and after the 1st day of December, 1919.

Ordered: 3. That the secretary of the Commission forthwith serve a copy of the report and order herein upon each of the telephone companies named in section No. 1 of this order and upon the Mayors of the cities and towns in which said companies are doing business.

Ordered: 4. That the telephone companies named in section No. 1 of this order notify the Commission within ten days after the receipt of a copy of the report and order herein, in the manner prescribed by Section 25 of the Public Service Commission Law, whether the terms of this order are accepted and will be obeyed.

By the Commission,
[SEAL.] N. E. WILLIAMS,
Secretary.

Dated the 26th day of November, 1919.

Bean, C., Blair, C., and Flad, C., concur; Busby, chairman, concurs in separate opinion; Simpson, C., dissents."

"Concurring Statement.

I concur in the result only reached by the majority report and order herein.

In my opinion this Commission, in the case of Simms v. Columbia Telephone Company, 2 Mo. P. S. C. 256, and the Supreme Court of this State in State *ex rel.* v Atkinson, 271 Mo. 36, have clearly held against the justness and lawlessness of an installation charge and what is called a change of name charge, and it is the duty of
1071 the Commission to follow the decision of the Supreme Court where the court has clearly spoken as in this case.

"It is true that these decisions by the Commission and the Supreme Court were rendered prior to the war and it may be that the court would reach a different conclusion upon the record now before us, showing increased installations and other costs on behalf of the

companies, but I feel that until this decision by the Supreme Court is reviewed by that court, it must control the action of the Commission.

WM. G. BUSBY,
Chairman."

SIMPSON, dissenting:

"I am much disappointed in the action of the majority of our Commission in refusing to inaugurate telephone installation and moving charges in our State. I cannot but think that we have taken a backward step in the march of modern progress. It is axiomatic as well with administrative bodies as with individual minds that instances arise and mileposts are reached in their journey whereat a forward step may be taken in aid of scientific progress, or they may stand by the roadside and watch the procession go by.

I think a decision directly the reverse of what this Commission has done was warranted by both law and evidence and should have been the action of our Commission; therefore, I have decided to set forth my views.

This new classification of installation and moving charges has been much misunderstood by the public, and our Commission as well as other state commissions have been the recipients of an appreciable amount of criticism thereto concerning. With many, who
1072 are uninformed because of a lack of study of this question, a hasty conclusion is reached that the revenue derived from installation and moving charges revert- to the exclusive benefit of the telephone companies. Nothing could be further from the fact than such a fallacious conclusion.

Back under the old regime of exclusive telephone competition that line of argument would have, in many instances, been tenable, but in this modern day when practically every move these utilities make, covering finance, rates and service, *are* under the direct supervision of governmental authorities, they, who assume that this character of revenue does not inure to the particular benefit of all telephone users, are possessed of a degree of pperility in the extreme. There is no hidden mystery as to the source of operating revenue of a present-day public service utility. It is the prescribed legal duty of the governmental regulatory body to grant it a reasonable rate of investment return upon the value of its property used and useful for the benefit of the public, a reasonable allowance for yearly depreciation, and likewise its legitimate operating expenses.

These charges are completely reflected and made up in their entirety by the rates it collects from its patrons. So it should be plainly understood as a fundamental in this case that all revenue a telephone company collects for installing or moving a telephone instrument must be paid by the patron who is demanding this particular character of service—that is to say, pay the expense directly incident thereto—or have all other users of telephones pay it for him.

The owners of these telephone companies in no instance are

either a gainer or loser by reason of this new classified oper-
1073 ating revenue. The law protects them in their investment from any onslaught of measures or requirements pertaining of a confiscatory nature, and it is the legal bounden duty of this Commission to see that they are accorded a fair investment return, supra, just so long as that end may be reached by same falling within the purview of reasonable rates and charges of their output to the consuming public.

Hence, I maintain, and will further on herein attempt to justify my position, that this new class of operating revenue reflects and directly inures to the benefit of the general, permanent telephone using public by requiring the party who directly contributes and causes an unusual and irregular operating expense against the general users of the telephone service to bear the burden thereof, and is manifestly a just charge bottomed upon present-day scientific rate-making.

Telephone rate making, owing to the many diversified interests the result will necessarily reach, is of an ultra intricate nature.

I do not think it incumbent upon me in this instance to discuss the generally accepted scientific principles upon which the rate fabric of present-day rates rests.

The much desired goal to be reached by a rate-making body is to formulate rates whereby each user of service will only be required to pay the true value of his individual requirements. However, all existent rates fall far short of this equitable status.

Our Commission has uniformly recognized three fundamental classifications in telephone service, viz., a rate for business, residence and rural telephone users. Each of these are subject to sub-
1074 division or secondary classification, but it will serve no useful purpose to review them at this time.

Keeping step with the march of progress the telephone companies of Missouri have petitioned our Commission for permission to add an additional classification to their aforementioned primary classes, to wit, an installation and moving charge.

Statistical evidence shows that the telephone companies of our State have subscribers of a reasonably permanent character of approximately 85 per cent against a transient or shifting class of patrons about 15 per cent. This small minority, because of their shifting, changing condition, place a heavy expense burden upon the company, and in turn upon the permanent subscribers, by reason of the fact that they cause the telephone company large operating expense in providing telephone facilities to them with no proper corresponding revenue return.

This transient element of telephone users is constituted principally of the flotsam and jetsam of the general business life of our country. The demands of this small minority of telephone users upon a telephone company for installation and moving requirements reached large proportions. A concrete instance thereof, founded upon competent evidence incident to the City of Joplin, Missouri, shows that the Home Telephone Company of Joplin, for every one thousand telephone subscribers it connects to its exchange

during the present time, that it loses nine hundred thereof and can only retain one hundred out of the thousand upon any reasonable basis of permanency. Practically the same conditions exist as to the City of St. Louis and other centers of our State. That is to say, this small 15 to 20 per cent of temporary users of telephones cause very nearly all the installation and moving expense. Is more
1075 cogent reason needed to prove why, at least, a part of this unusual expense should be classified against this particular class of telephone users and not be required to be collected off the regular, permanent subscriber, as must necessarily be done by the present action of the majority of our Commission?

Installation, removal and kindred charges are designed to assess the cost of extra or added service to the class of consumers creating much added cost, and to relieve the patron who does not contribute to such extra cost from the unjust burden of perpetually paying an excessive rate in order that a special service may be rendered to a particular class of customers at a less than cost rate. In other words, it is a commendable step in the direction of distributing the burden of cost of service in proportion to the service rendered.

Mr. J. C. Crane, general manager of the Home Telephone Company, of Joplin, Mo., testified that an analysis of thirty stations of the Joplin Exchange shows an average cost of installation of $15.72, divided as follows:

Labor	$2.27
Material	12.96
Auto Exp.	.49
	$15.72

That when the phone is removed there is a loss of $5.04 per station, made up as follows:

Loss of labor	$2.27
Loss on material	1.30
Auto expense	.49
Labor removing	.98
	$5.04

1076 He found the loss at Carthage per station to be $5.37.

J. M. McShane, former chief accountant of our Commission, who had been empowered to make detail study of this particular question, testified and enumerated the constituent items making up the operating account incident to installation and moving charges and showed that each service connection created an individual expense account of from $3.27 to $6.18 over and above any proper charge to capital account.

These operating charges, exclusive of any capital charge, vary in amounts over our State, such as Joplin, $5.04; Carthage, $5.37; Jefferson City, about $6.00, with other points of our State in like proportion.

The two stumbling blocks before our Commission upon the facts in this case appeared to be—

First, a duplication of income to the companies, and
Second, an unjust discrimination as to the old long-time subscriber and the new long-time subscriber.

I have been unable to see any supporting merit to either contention.

I do not think there could possibly be any duplication of income result from the service connection charge for the following reason: The cost of material used and labor consumed in original installation is capitalized and the company earns a return on that amount, but there is also an expense estimated in the record evidence from $3.00 to $8.93, which is not capitalized, but is charged into operating expense. The connection charge of $3.50 or $2.50, whatever the Commission might allow not in excess of the additional ex-
1077 penses incurred, supra, will be credited to revenue and offset or partially offset this operating expense, and when the operating expenses are deducted from operating revenues it leaves the net profit on operations for the period. Then the revenue accruing from this service connection charge will correspondingly increase this net profit on operations, and when the net profit on operations is divided by the plant original cost it will absolutely show just what the company's results of operating are.

Moreover, I cannot see that there will be any discrimination between the old long-time subscriber and the new long-time subscriber. The new long-time subscriber will pay his installation fee when connected up and will be forever relieved from paying costs created by other new short-time subscribers. The old long-time subscriber will not be assessed now and will share in the same immunity from new short-time subscribers' costs, but he has borne the cost of such added service in the past which the new long-time subscriber has not. The old long-time subscriber has carried this unfair operating expense for years by having same proportionately reflected in his exchange rates, and likewise the long-time subscriber will carry the same class of unfair burden if we are to refuse to be guided by this new classification. Both the new and old long-time subscribers will be benefited by the change; whereas, if this new classification, correct in principle, and progressive in conception, is denied, both classes of permanent patrons will continue, as they have in the past, to shoulder a portion of a cost that they in nowise create and the discrimination is, in my opinion, exclusively against both these users.

Regarding the charge for change of name, the same principles involved in the installation charge are operative here. The
1078 evidence shows that the gross cost incident to the change in name amounts to $2.02.

I can readily see how a difference of opinion might arise as to what would be a proper charge covering all this class of service. The classification is yet young in service. I think the various charges should be so graded that an appreciable burden can be lifted from permanent subscribers, and yet fall safely within a mar-

gin which would permit of a normal development of the business. However, a final proper standard of charges could be reached in the future as actual experience of the companies indicated the results, but that some charge should be made therefor at this time, I entertain not the least doubt. That I may get my ideas more cogently set forth herein, I incorporate the following as to what I think this Commission should have ordered in this case:

1. For complete establishment of individual or party line service:

(*a*) In exchanges with 1,000 or more company owned stations, $2.50.

(*b*) In exchanges with 500 or more and less than 1,000 company owned stations, $2.00.

(*c*) In exchanges with less than 500 company owned stations, $1.50.

2. For each extension station connected with any class of telephone service:

(*a*) In exchanges with 1,000 or more company owned stations, $1.25.

(*b*) In exchanges with less than 1,000 company owned stations, $1.00.

1079 3. For the establishment of a private branch exchange service:

(*a*) For each trunk line connecting the private branch exchange with the central office, $2.50.

(*b*) For each telephone connected with the private brach exchange except operator's telephone sets, $1.25.

4. For the establishment of service by the use of instrumentalities already in place upon the subscriber's premises, and where no change is made in the type or location of these instrumentalities, to cover directory, switchboard and circuit expense on each line.

(*a*) In exchanges with 1,000 or more company owned stations, $1.00.

(*b*) In exchanges with 500 or more but less than 1,000 stations, 75 cents.

(*c*) In exchanges with less than 500 company owned stations, 50 cents.

5. Service connection charges are not to supersede mileage charges or installation and construction charges made because of unusual cost, but are to apply in addition to such charges.

6. Service connection charges are not to apply to the service known as "Service Stations" or "switching service".

7. Service connection charges are not to apply to "public telephones" or to "public pay stations" where service is established primarily for the benefit of the public. This exception does not include such service as semi-public guaranteed or rental pay stations.

1080 8. Service connection charges are not to apply to private lines equipment not connected with a central office for exchange or toll service.

9. All charges herein described are to be collected from all applicants for new service of the classes specified above at the time of application and prior to the establishment of such service except that the utility may establish service in advance of collection in case of modification or additions to service of existing subscribers.

10. Charges for changes of location (inside moves) of telephone equipment or wiring:

(*a*) For moving a telephone from one location to another in the same room, $1.00.

(*b*) For moving a telephone from one location to another on the same floor within the building, $1.25.

(*c*) For moving a telephone from one location to another in the same building, but not on the same floor, $1.50.

11. Charges for changes other than moves in wiring and equipment, made on the initiative of the subscriber:

(*a*) For change in type of telephone set, $1.00.

(*b*) For other changes in equipment or wiring a charge shall be made not to exceed the cost of labor and material.

1081 12. Charges under rules 10 and 11 shall not apply if the changes or moves are required by the company for the proper maintenance of service or equipment.

13. Charges for moves or changes specified above shall in no case exceed the service connection charges applicable to the entire service of the particular subscriber.

14. Charges herein specified shall not apply if changes are required on account of changes in class or grade of service.

These present charged rates for installation and moving of telephones have been in vogue in our State, by virtue of Federal authority, for several months and constitute an integral part of the operating revenue of telephone companies doing business in our State. Our Commission has passed upon numerous cases for increased rates and in each case has taken account of this revenue result in the gross operating revenue of the company appearing before it. We refrained from passing upon the direct issue as to the merits or demerits of the new charge for services, but nevertheless, we took into account the results therefrom. Since this revenue is now lost it will necessarily result in a reclassification of revenue in many past cases,

which in the end can only result in this lost revenue being reflected proportionately in increased rates to present regular telephone subscribers. With this condition confronting the Commission, among many others of patent merit kindred thereto, my position has been that injustice to the companies of our State, and as well the regular, dependable subscriber, that our Commission should not precipitately disturb the present status of the matter, until such time as
1082 our courts might pass upon in review this new question of rate classification. The exact amount of this new class of revenue is to some extent conjecture, but from the best evidence available from the record in this case, I am confirmed in my opinion that same will exceed $200,000 per annum in our State.

This Commission majority have predicated their position, as to the law in this case, upon the decision (Bradford v. Citizens Telephone Company, 161 Michigan 385, and upon Sims v. Columbia Telephone Company) passed upon by our Missouri Supreme Court under the title of State ex rel. v. Atkinson, 271 Mo. 36. I maintain that the instant case before this Commission is not controlled by either of these decisions, for the very good reason that the issues involved in our case have never been in either court.

The issues involved in the Bradford case, supra, are clearly dissimilar from those of the instant case. A statement of the facts by the Court in the body of the opinion says:

'The facts are not much in dispute. The answer of defendant practically admits the facts as set forth in the bill, but denies that it discriminates against complainant. It appears that in 1898 the defendant purchased the telephone exchange in said city from the Ottawa Telephone Company, and since that time the said telephone exchange has been operated and carried on in said city by defendant. In the summer of 1907 the defendant installed an automatic telephone exchange, taking out the phones which had been previously used, and replaced them with new phones connected with the automatic system. Upon installing the automatic system aforesaid, the rates charged to all subscribers were fixed at $15 for resi-
1083 dences, and $24 for business places, and contracts for service, for ten years in some instances, and five years in others, were entered into between the defendant and some of its patrons, at these rates, and other contracts for three and two years were also entered into by the defendant and some of its patrons, at the same rate. However, on the 1st day of January, 1908, the defendant fixed new rates for all new subscribers at $18 for residences, and at $30 for business places. The new subscribers were served with identically the same service, and were to use the same fixtures as the old subscribers. The phones were placed free to all patrons, whether new or old subscribers. Upon the hearing, a decree was entered for complainant and defendant appeals.'

"Evidently the Michigan Utility endeavored to inaugurate an increased charge for new consumers, based on the fact that the more consumers the utility served, the greater would be the unit cost per consumer, and while this is an acknowledged and generally under-

stood peculiarity of the telephone business, yet it is clearly patent that though the unit cost per consumer increases with additional subscribers, nevertheless, the unit cost of service would be uniform over the total patrons at any one time. The increased cost would be followed by increased value of service, more patrons would be accessible to each customer, but the number would be equally available to each. Consequently the Michigan Court ruled only on the points at issue, supra, that is, that while the unit cost of service increased with added patrons that nevertheless, for the service received by each, viz., new and old subscribers, the cost was equal, and the
1084 value of the service equal and hence to place the two classes on different rates would be discriminatory.

In the case now before the Missouri Commission, the question is entirely dissimilar. There are three classes of patrons to be considered—the old permanent subscriber, the new permanent subscriber and the new transient subscriber. The claim of discrimination seems to lie in the comparison of the new permanent patron with the old permanent patron for the reason that the new permanent consumer will pay $2.50 (or whatever the charge may be), whereas, the old permanent subscriber will secure the same benefits as will inure to the new permanent patron without paying anything for such benefits. But right here is what the majority Commission's claim for discrimination overlooks: The old permanent subscriber, according to the testimony of Mr. Crane, based on conditions at Joplin and assuming 80 per cent permanent and 20 per cent transient, is paying 10 cents per month for costs he does not incur (that is, the changes required by transients) and 10 cents per month equals $1.20 per year, and at that rate an old permanent subscriber of two and one-half years' standing would have paid (exclusive of interest accumulations) $3.00, or if he is of five years' standing he would have paid $6.00 over and above a just rate. Now compared with the $2.50 required of the new permanent subscriber it seems to me that the discrimination claim becomes lost.

It seems to me that to oppose this charge is doing an injustice to the great body of telephone users. Eighty per cent to ninety-five per cent, according to statistics submitted, are substantial, conservative customers; 5 per cent to 20 per cent are transients. The 5 per cent to 20 per cent are because of whim or restlessness cre-
1085 ating a cost that benefits only themselves, and in all justice they should surely bear their own costs. To saddle it upon the permanent patron is unjust and certainly a discrimination.

If this Sims case, supra, is decisive of the issues involved in the instant case now before our Commission, I must confess my obtuseness in being able to discern the component elements of similarity between the two cases.

The history of this case, 2 Mo. P. S. C. 256, shows that what is usually the happening with such cases, a valuation of the entire property of the company was made by the Commission, and that the valuation phase of the case assumed commanding prominence throughout its pendency. The other issues therein involved were never of more than a collateral secondary proposition. But separate

and apart this general description of the Sims case I cannot see wherein it can be construed to cover the issues of this new classification of revenues because the proposition in the Sims case was a cash deposit and forfeiture matter wholly incident to a rental payment for general telephone service. What is said herein as to the $3.00 charge in the Sims case is also applicable to the 50 cents moving charge therein, for it was decided by this Commission and approved by the Supreme Court upon review by the same principles of law that controlled the $3.00 charge. The prescribed rule of the telephone company in that case was as follows:

'A deposit of three dollars shall be made with each order for service in the city exchange, which deposit will be credited on account of service in the concluding weeks of a full year.'

1086 Before our Commission and by the Supreme Court on review this proposition was at all times treated upon the theory that it was an increased rental charge in favor of the long-time user and against the short-time user for the same general class of telephone service.

The case before covered by the new classification is not only nonpartaking of a rental charge, but is devoid of any discriminatory features as heretofore recited.

I do not know how to make my position plainer as to the dissimilarity of issues in the Sims case and the case now before us than to incorporate the following excerpts from the decision in the Sims case as held by our Commission and our Supreme Court:

'This Commission has no desire to deny to any telephone company the right to reasonably protect itself against loss through the inability or unwillingness of its customers to pay. We see no reason why a charge for three months in advance for every telephone when installed, with charges monthly in advance thereafter, will not fairly and reasonably protect the company against loss. It is possible that rare and exceptional cases might occur when such a method of payment would not be adequate protection. As in the case of private enterprises, public utilities must expect to take some chances. All business involves some risk. We believe that if the company be allowed to charge three months in advance at the time of installing the telephone, and thereafter to collect for one month in advance, it will be fairly and reasonably protected. Such a course will do away with the discrimination complained of, and remove very
1087 much of the friction and ill feeling which has been engendered against defendant by the exacting of the three-dollar deposit. It is the opinion of the Commission that the custom of requiring a deposit of three dollars upon the installation of the telephone should be discontinued, and that in lieu thereof, defendant company should be permitted to charge for three months in advance as a condition precedent to the installation of the telephone, and that thereafter one month's advance payment may at all times be required' (2 Mo. P. S. C., l. c. 283-84).

'III. Complaint (5) relates (*a*) to on installation charge of three

dollars; (*b*) to an alleged removal charge of fifty cents. These charges were decided by the Commission to be unreasonable. The first (*a*) is called an installation fee, but appellant's counsel in their brief insist that it is not an installation fee, but is merely a cash deposit required to secure the payment of bills. If the service is continued until the end of the year the subscriber is given credit for the amount on the last two months of the year. If service is discontinued before the end of the year the deposit is forfeited as being in the nature of an additional charge for short-time service. It is, therefore, merely a pledge which the subscriber puts up to secure his payments. The company by requiring this advance payment secured additional working capital on which it pays no interest. Whether that is the purpose of the requirement or not, that is the effect. It disregards the principle that a pledge is always liable to the pledgor for the profit which he receives from the thing
1088 pledged (Houston v. Holliday, 5 Am. Dec. [N. C.] 522; Bilson v. Martin, 49 Vt. 474; Hunsaker v. Sturgis, 29 Cal. 142; Geron v. Geron, 50 Am. Dec. 143). In giving credit for this amount at the end of the year it seems that the regulation does not add interest to the amount so credited and used by the company for the year. The Commission in passing upon this complaint held that the company had a right to adopt reasonable regulations to secure the payment for service, but also held that it was unusual to charge extra for short-time service and that this regulation was unreasonable. In this, it is the opinion of the Court that the Commission was right. The Commission suggested that the company might, if it chose, require of any subscriber three months' payment in advance for service, which we think was a very liberal provision for the company. The Commission has not attempted to make any rule, but suggests one which the company might make' (271 Mo., l. c. 36-37).

"I think our Commission is in error in this whole subject matter, and I file the foregoing as my dissenting views."

NOAH W. SIMPSON,
Commissioner.

1089 And thereafter, on the twenty-sixth day of November, 1919, there was issued by the Commission in cases Nos. 2121, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136 and 2149, an Order as to toll rates which is omitted here since the Order as to toll rates is not involved in this appeal.

Concurring Statement on Motion for Rehearing.

FLAD, *Commissioner:*

Arguments having been presented by the telephone companies on a motion for rehearing, I desire to re-affirm my concurrence in the order only of the Commission, as entered on November 26th, and deem it proper therefore to present briefly my views upon the questions involved, as follows:

1. Service connection charges and charges for moves and changes are not unduly discriminatory, and therefore not unlawful, unless such charges are excessive or unreasonable.

A charge based upon the cost of transporting and setting and fastening in position the telephone instruments owned by the company, and attaching the instruments to the customer's wiring, where such work is actually done by the company, including the cost of labor and material for whatever wring is done by the company, at the time, in the building of the customer, would, in my opinion, be eminently fair and equitable. And unless such a charge should in any particular case be deemed to unduly restrict the growth of the exchange, and hence the saturation of the available field, the assessing of such reasonable charges is to be encouraged, for, under proper regulation, they will be reflected in a corresponding reduction in the exchange rates.

2. The ruling of the Supreme Court of this State in State ex rel. v. Atkinson, 271 Mo. 36, 37, does not declare the service connection charge unjust or unlawful. In that case the Court held that a cash deposit which is "merely a pledge which the subscriber puts up to secure his payments" and for which the subscriber receives no interest was improper. The Court also suggested that the Commission was right in holding "that it was unusual to charge extra for short-time service and that this regulation was unreasonable."

Nor does the Court declare the removal charge improper, except "where there is no such removal of the telephone, but simply where one tenant moves out and another moves in, without additional expense to the company, except the small matter of bookkeeping."

The reasonable inference from the decision of the Court in the case above cited is that if interest had been allowed the re-
1090 quiring of a deposit might not have been considered improper and that if anything more than the "small matter of bookkeeping" cost had been involved in the moving charge, this likewise might not have been condemned.

To my mind, the ruling of the Court in the case above cited does not involve the question at issue in the case now under consideration by the Commission; for in this latter case no cash deposit is required, but presumably merely payment for material and labor expended for the direct benefit of the particular customer; no extra charge is included for short-time users, and no charge is made which represents merely a "bookkeeping cost."

3. The amount of the service connection charge, as well as of the charges for moves and changes, should be fixed in each case so as to bear a proper relation to the costs involved, which vary with the location, size and style of the exchange. These charges should not be based on a uniform standard to be applied to all exchanges alike, as prescribed by the Postmaster General.

New installations and the fullest use of the telephones should be encouraged, and the uniform charges now in effect should no longer be allowed, but might properly be replaced by such reasonable charges as may appear proper, after investigation, for any particu-

lar exchange, with due regard to the desirability of placing no serious impediment upon its growth and development.

1091 *Order as to Toll Rates.*

The Commission by orders issued the fourth, sixth and twenty-third days of August, 1919, having required the telephone companies named therein and herein to show cause why they should be permitted to continue to charge the rates for toll message service (and other services) now made by them and put into effect under the provisions of Order No. 2495 and Order No. 2797 of the Postmaster General and conditionally extended by Act of Congress for four months from August 1, 1919;

And said telephone companies having filed answers in compliance with said orders and, at public hearings before the Commission held at its office in Jefferson City after due notice to all interested cities and persons, having submitted full and detailed information as to the reasonableness and justice of the classification and rates and charges for telephone toll service provided for in said Order No. 2495 as modified by Order No. 2797 and the Commission, having made full investigation in relation thereto, finds that under the existing emergency conditions and present high cost of labor and materials and increased wages, the classifications of service, rates and charges within this state provided for in said order should not be disturbed and should be permitted to remain in full force and effect until December 1, 1919, and thereafter for a temporary period of thirteen months, unless otherwise ordered;

Now, therefore, after due deliberation, it is

Ordered: 1. That the classifications of service, rates and charges for telephone toll messages within this state provided for in Order No. 2495, issued by the Postmaster General and effective by the terms of said order on January 21, 1919, as modified by Order No. 2797 of the Post Master General dated February 17, 1919, be and they are hereby approved and permitted to remain in full force and effect until December 1, 1919, and that the telephone companies named in this order be and they are hereby authorized to file in the office of this Commission on not less than one day's notice and effective on December 1, 1919, their respective schedules of rates and charges for telephone toll messages within this state and classifications of such service in conformity to the classifications, rates and charges for such service provided for in said Orders No. 2495 and 2797.

Ordered: 2. That said rates and charges for toll messages and said classifications of service shall remain in effect for a temporary period of thirteen months from December 1, 1919, at the end of which period such rates and charges and classifications of service, without further order shall cease and the rates and charges for toll messages and classification of such service now on file and charged by said companies prior to the effectiveness of said Order No. 2495 shall be

restored and become again in full force and effect, Provided, that the Commission may hereafter by further order continue the rates and charges and classifications of service, herein authorized, for another or further period or otherwise change or modify the same within or at the end of said period of thirteen months upon
1092 the evidence and facts now before the Commission, or upon such other evidence as said companies or any interested party may offer, and for this purpose the Commission fully reserves and retains jurisdiction of the parties and the subject-matter involved in these cases.

Ordered: 3. That the telephone companies affected by this order be and they are hereby required to keep a full and accurate account of the revenues derived from the rates and charges herein authorizd and of the revenues derived from each classification of service as well as the expenses incurred in furnishing such telephone toll service and to file a full report thereof with the Commission at the end of each three months that said rates and charges and classifications of service are in effect, such reports to be in addition to any other reports now required by law.

Ordered: 4. That said telephone companies be and they are hereby required to give publicity throughout the territory served by them by advertising or otherwise of the several classifications and kinds of toll service available to the public together with the rates charged for such service to the end that the general public may become informed as to such classifications and kinds of service, and that said companies include in their quarterly reports provided for in Section 3 of this order a full statement of the things done and steps taken by them respectively to comply with the provisions of this section of the order.

Ordered: 5. That this order shall take effect on December 1, 1919, and that the Secretary of the Commission forthwith serve upon the telephone companies named in this order and upon all other interested parties a certified copy of this order, and that said telephone companies on or before the effective date hereof, notify the Commission in the manner provided in Section 25 of the Public Service Commission Law whether the terms of this order are accepted and will be obeyed.

By the Commission,
[SEAL.] N. E. WILLIAMS,
Secretary.

1093 Division IV.

Opinion of the Supreme Court.

The following is a correct copy of the opinions of the Justices of the Supreme Court of Missouri:

1094 (Supreme Court of Missouri, in Banc, May 24, 1921.

(No. 21939.)

STATE ex Rel. SOUTHWESTERN BELL TELEPHONE CO.

v.

PUBLIC SERVICE COMMISSION et al.

Motion for Rehearing Denied Aug. 1, 1921.)

WALKER, *C. J.*:

The appellant owns and operates telephone exchanges and toll lines connecting with its own and other systems in this state. It is the corporate successor of various antecedent companies, systems of exchanges, and toll lines which represent generally and collectively what was known as the Bell Telephone Company. In July, 1918, the federal government, under a congressional resolution, assumed control of all telegraph and telephone companies and continued such control until July, 1919. During the period of control the telephone and telegraph systems were operated under the orders of the Postmaster General. In November, 1918, the Postmaster General ordered that on and after December 1, 1918, certain charges for the installation and moving of phones be authorized. December 13, 1918, he authorized an increase of toll charges to be made by appellant for intra- and inter-state service. Thereafter he made an order, effective May 1, 1919, authorizing increased charges for local exchange service in 65 local exchanges of appellant in this state. The Public Service Commission resisted in the state courts the imposition of increased toll charges for service, and in the United States District Court a suit was instituted by the Postmaster General to enjoin interference with the increase of rates in appellant's local exchanges in this state. The decision of the Supreme Court of the United States in Dakota Central Telephone Co. v. South Dakota, 250 U. S. 163, 39 Sup. Ct. 507, 63 L. Ed. 910, 4 A. L. R. 1623, settled adversely to the state all the issues involved in that
1095 action, and established the contention that, while the telephone systems were controlled by the Postmaster General under the war powers of the United States, his right to make rates was complete, and excluded state supervision and control.

At midnight, July 31, 1919, government control of the telephone systems ceased, and the companies resumed the operation of their lines under the provisions of the act of Congress of July 11, 1919. This act, in restoring the telephone properties to their owners, contains the following proviso, significant in its application to the case at bar:

"That the exsting toll and exchange telephone rates as established or approved by the Postmaster General on or prior to June 6, 1919, shall continue in force for a period not to exceed four months after

this act takes effect, unless sooner modified or changed by the public authorities—state, municipal, or otherwise—having control or jurisdiction of tolls, charges, and rates or by contract or by voluntary reduction."

The new rates, and increase of rates mentioned, affecting the appellant, were increases established or approved by the Postmaster General prior to June 6, 1919, and therefore were within the terms of the proviso above quoted. The rates thus authorized by the Postmaster General in the emergency of war had suspended the theretofore existing rates, established by the Commission, for service in the various local exchanges of appellant, and for its toll service.

Prior to the taking of possession of the telephone systems by the federal government, each one of the local exchanges owned and operated by appellant was treated by the Public Service Commission as a separate and independent unit for rate-making purposes, and the rates specified for each local exchange were based upon the facts applicable to that exchange.

1096 In view of the situation and of the terms of the federal act returning the properties to the companies and prescribing the limitations upon the federal rates, the Commission on August 4, 1919, issued its order directing the appellant to appear and show cause why it should be permitted to continue to charge the rates put into effect by the Postmaster General for telephone service rendered within this state. Pursuant to this order hearings were had and testimony was taken and considered by the Commission to provide for the conditions arising immediately upon, and by virtue of the expiration of the four months' period, when, by express enactment and limitation, the rates prescribed by the Postmaster General would cease to be authorized, even where not, within the four months' period, changed or modified by state authority.

The appellant offered testimony as to the value of its property in the state. It furnished the estimates of its engineers of the cost of reproduction of its local exchanges and of its toll properties, and submitted evidence of actual cost of the properties according to the books of the company.

The Commission, previous to this proceeding, had undertaken, through its own experts to make a complete and formal valuation of three of the appellant's local exchanges, those at Caruthersville, at Springfield, and at St. Louis, and the respective findings are shown in its official reports. Re Southwestern Tel. & Tel. Company, 2 Mo. P. S. C. 492; Re Missouri & Kansas Telephone Company, 6 Mo. P. S. C. 279; and Re Southwestern Telegraph & Telephone Company, 8 Mo. P. S. C. 433. The time available rendered it impossible for the Commission, it is claimed, to make formal inventories and valuations of all of the numerous exchanges and units constituting the appellant's property in the state, if such course be deemed a prerequisite to the action of the Commission. Having before it

1097 the results attained in the cases mentioned, and confronted with the necessity of acting upon the situation presented, the Commission employed the results reached in those formal valuation

cases as a means of testing the conclusiveness of the estimates of reproduction cost offered by the appellant in respect of other exchanges. The appellant's estimate of the total reproduction cost new of its properties within the state was $35,100,071 and the reproduction cost, less depreciation, $31,355,278. The book cost of the properties was given as being $22,888,942.

This was an adjusted or so-called "prorated book cost," and had reference to a book adjustment by the appellant of estimated over and under values, and to the fact that in the process of the acquisition of property in the various towns and cities of the state the appellant, in order to eliminate competition, sometimes paid a price much in excess of value, and sometimes, because of discouraging conditions affecting operation by a competitor, purchased a plant at far below actual value.

The appellant's estimate of the cost of its properties at St. Louis, Springfield, and Caruthersville is as follows:

Reproduction cost new	$18,971,011
" " " , less depreciation	16,913,673

The combined value for rate-making purposes, as fixed by the Commission at St. Louis, Springfield, and Caruthersville, plus additions to date, amounted to $11,033,898.

The Commission, for the purpose of reaching a reasonable valuation adapted to the conditions before it, reduced the estimates of the appellant for its whole property in the same ratio as its estimates at St. Louis, Springfield, and Caruthersville were reduced in determining the value of those plants for rate-making purposes. Following this method the Commission obtained the following results:

	Based on cost of reproduction new	$20,400,000
1098	Based on cost of reproduction less depreciation	$20,350,000

The Commission also arrived at a value by making certain deductions from the book value as given by the appellant. Said book value, as adjusted by the Commission, being $20,456,631.33. With these three sums before it, the Commission fixed a value of $20,400,000 upon appellant's property in Missouri.

The Commission expressly disclaimed the purpose of doing more than adopting a tentative or temporary valuation, and did not undertake finally, or authoritatively, to fix the value of the property, and so declared in its report. The Commission permitted the toll rates established by the Postmaster General to stand, discontinued the installation charges, and lowered the rates for local service furnished to both residences and business houses in some of the appellant's exchanges. The changes downward, as disclosed by the record, were small. The reductions of local rates in the entire state aggregated the sum of $91,194.30, and the disallowance of installation and moving charges reduced the revenue of the appellant company in Missouri in the sum of $118,000 approximately. Appellant claims that this reduction aggregated $200,000.

The appellant is owned and controlled by the American Tel. & Tel. Co., which owns and controls the Bell Telephone System ex-

tending throughout the United States. The American Tel. & Tel. Co. earns and pays to its stockholders a dividend of 8% per annum, and has done so for several years past.

The local exchanges involved in this litigation handle a great number of outgoing and incoming long-distance messages for the American Tel. & Tel. Co. Appellant's general manager stated that for these services the local exchanges were allowed 15% of the toll charged for sending such messages, not to exceed 20¢ on any one message. This charge, it seems, was on outgoing messages only.

For handling an incoming message of the American Tel. &
1099 Tel. Co. nothing was allowed. This charge is not based upon any scientific or other analysis by appellant of the service rendered by the local exchange, but is fixed arbitrarily.

The determination of the value of the property devoted to a public use, and the probable net revenue that will be derived from the rates fixed by the Commission, are, as the appellant concedes, the only questions confronting us for solution.

After an application for rehearing upon the Commission's order had been overruled, the case, by writ of review under section 10522, R. S. 1919, was certified to the circuit court of Cole county, where it was heard upon the record and exhibits introduced before the Commission; and on January 30, 1920, the circuit court affirmed the order of the Commission. Thereupon this appeal was taken. The record here is the same as that before the circuit court.

1. Power to Fix Rates.—It is contended, with seeming seriousness that the Public Service Commission is not authorized to establish rates, in that this power is vested in the appellant. Much space is employed and many authorities cited and discussed to sustain this contention. They fall short of that end. There is no ground for controversy that the Commission, as is the case with every board or organization for the control and supervision of public service corporations, must, in the exercise of its defined powers, conform to the procedure prescribed in the act of its creation, or that of the general law where applicable, to render its findings regular and to afford the corporation to be affected ample opportunity to present its objections to the proposed action. It is not necessary, therefore, in determining whether the Commission has power to fix rates, that the wholly foreign question as to the elementary rule of construction of statutes in pari materia be discussed, nor that the finding of the Commission

be sustained by proof introduced at the hearing—a correct
1100 conclusion, where relevant, but in the instant case beside the question—as to the Commission's authority to act, because a hearing was given and evidence introduced. The matter at issue, as disclosed by the relevant portion of this contention, is the power of the Commission to fix rates for telephone companies. The existence of this power, not only as applied to telephone, but to other public utility corporations, has been settled here and elsewhere in such a conclusive manner as to leave no room for further controversy. We but repeat what we have frequently said before; that the primary power of fixing reasonable rates to be charged by a public utility corporation finds its origin in the police power of the state. City of

St. Louis v. Bell Telephone Co., 96 Mo. 623, 10 S. W. 197, 2 A. L. R. 278, 9 Am. St. Rep. 370; State ex rel. Garner v. M. & K. Tel. Co., 189 Mo. 83, 88 S. W. 41. This power, inherent in sovereignty, has been given express recognition in our organic law in the declaration that the right of the state to exercise this power cannot be abridged, nor can the law-making power contract it away. Section 5, art. 12, Const. Mo. In addition, we have held many times that the fixing of rates for public service corporations is an exercise of the police power, and that the Legislature may delegate this power to the Public Service Commission. State ex rel. Sedalia v. Pub. Ser. Com. 275 Mo. 201, 204 S. W. 497; City of Fulton v. Pub. Ser. Com. 275 Mo. 67, 204 S. W. 386; City of Joplin v. Wheeler, 173 Mo. App. 590, 158 S. W. 924; State ex rel. Rhodes v. Pub. Ser. Com., 270 Mo. 547, 194 S. W. 287; Iowa Tel. Co. v. Keokuk (D. C.) 226 Fed. 82.

Such a delegation of power as is necessary to authorize the Public Service Commission to determine the just and reasonable rates and charges which should be made by telephone companies has been given in the statute defining the powers of the Public Service Commission. Section 10502, R. S. 1919. The power thus dele-
1101 gated is in nowise limited by the general statute (article 6, c. 90, R. S. 1919) defining the powers of telegraph and telephone companies (section 10128, R. S. 1919), in which they are authorized to make such reasonable charges for services rendered as they may establish. This power is to be construed as subordinate to that conferred upon the Commission in determining the reasonableness of rates. There is no merit, therefore, in the contention that the Commission is not clothed with the power to fix rates.

Notwithstanding the power of the Commission to fix rates, it is contended in some manner not definitely defined that Congressional legislation placing the telephone lines under federal control has in some way affected the Commission's power. The proceeding at bar in which is involved the opposition of the appellant to the rates established by the Commission, grows out of an order of the Commission requiring the appellant to show cause why it should not change the rates fixed by the Postmaster General during the period of federal control and charge the rates established by the Commission. The Postmaster General's action was based on the authority of a joint resolution, or, if it may be so designated, an act of Congress, passed July 16, 1918. U. S. Stats. vol. 40, c. 154, p. 904. This legislation had its origin in the exigencies of war. This act has been construed by the Supreme Court of the United States in Dakota Central Telephone Co. v. South Dakota, 250 U. S. 163, 39 Sup. Ct. 507, 63 L. Ed. 910, 4 A. L. R. 1623, in which it was deemed sufficient, in upholding its validity, as in Northern Pacific Railway v. North Dakota, 250 U. S. 135, 39 Sup. Ct. 502, 63 L. Ed. 897, to assign as a reason therefor that—

"It was a war measure involving executive discretion, and hence not within the cognizance of the judiciary."

1102 With the reasoning employed to sustain this conclusion we are not concerned here further than to say that, in the ab-

sence of war as a reason, and its termination as a definite limit upon legislation of this character, it cannot be reasonably concluded that the act would have stood the test of judicial construction.

While the illustration is perhaps more in the nature of a historical parallel than a decisive ruling, the reason for the creation of the provisional government in this state during the Civil War is not dissimilar from that which prompted the enactment of the congressional resolution here under review. Each had its origin and the excuse for its existence in the disturbed condition of public affairs due to war. When that ceased, and governmental affairs and business conditions assumed their accustomed courses, there no longer existed either reason or necessity for the continuance in the one instance of the improvised form of state government, or in the other of the further operative effect of the congressional resolution. In recognition of the temporary character of these expedients, for they were nothing more, their existence was by the acts of their origin limited to the conditions under which they were created. As applicable to the instant case, when the war ceased the legal force and the purpose of the congressional resolution ceased in accordance with its terms, and became inoperative upon the passage of the act repealing same. Rates fixed by the Postmaster General became, as a consequence, inoperative; and those theretofore established by the Public Service Commission went into effect. In short, the Commission's rates were not abolished by congressional action, but were simply held in abeyance during the existence of the congressional act, or until the repeal of same July 11, 1919. U. S. Stats. 66th Cong. Sess. I. c. 19, p. 157; section 10434, R. S. Mo. 1919.

1103 2. Reasonableness of Rates.—In fixing telephone rates it is enjoined upon the Commission to have—

"due regard, among other things, to a reasonable average return upon the value of the property actually used in the public service." Sub-division 1, §10502, R. S. 1919.

For the reasons stated we are not concerned, except as a subject of comparison, with the rates fixed by the Postmaster General during the period of governmental control. They passed beyond the plane of judicial vision, so far as it may be sought to render them a basis for the present complaint or our guidance, when the act authorizing them was repealed. What we are concerned in is the reasonableness, within the meaning of the law, of the rates established by the Commission, in the determination of which no better formula can be prescribed than that given by the Supreme Court of the United States in Interstate Com. Com. v. Union Pacific R. Co., 222 U. S. loc. cit. 547, 32 Sup. Ct. 108; 56 L. Ed. 308, in which it is said, in effect, that the reasonableness of an order of a rate-making body, regular upon its face and such as is here involved, may be questioned if: (1) The rates are so low as to be confiscatory and hence inimical to the constitutional provision against taking property without due process of law; or (2) that the rates were fixed arbitrarily and unjustly without regard to the preponder-

ance of the competent evidence; or (3) that they were fixed in such an unreasonable manner as to cause the shadow, and not the substance, to determine the validity of the exercise of the power.

The fact that the Interstate Commerce Commission is clothed with certain judicial powers not possessed by the Public Service Commission does not render inapplicable here the succinct rules above stated in determining the reasonableness of the rates in question. Both the national and the state Commissions are, in the main, administrative bodies, and their orders are to be so classified in the fixing of rates. When, therefore, their acts in this regard are called in question, the courts are required, as in the
1104 review of equitable proceedings, to hear and determine the matter involved in such a manner as to do full and complete justice in the premises. State ex rel. Wabash Ry. Co. v. Publ. Serv. Com., 271 Mo. 155, 196 S. W. 369; A. T. & S. F. Ry. Co. v. Pub. Serv. Com. (Mo.) 192 S. W. 460; Lusk v. Atkinson, 268 Mo. 109, 186 S. W. 703; Int. Com. Com. v. Ill. Cent. 215 U. S. loc. cit. 470, 30 Sup. Ct. 155, 54 L. Ed. 280; Int. Com. Com. v. Nor. Pacific, 216 U. S. loc. cit. 544, 30 Sup. Ct. 417, 54 L. Ed. 608; Int. Com. Com. v. Ala. Mid. Ry., 168 U. S. 144, 18 Sup. Ct. 45, 42 L. Ed. 414; Van Dyke v. Geary, 244 U. S. 39, 37 Sup. Ct. 483, 61 L. Ed. 973; Penna. R. Co. v. Towers, 245 U. S. 6, 38 Sup. Ct. 2, 62 L. Ed. 117, L. R. A. 1918C, 475. The question involved is one of fact; the ultimate matter to be determined is, Did the Commission act within its powers as above defined?

In determining what constitutes the greater preponderance of the probative proof, so far as concerns the reasonableness of the rates, we are authorized by the statute (section 10534, R. S. 1919) to regard those fixed by the Commission as prima facie lawful, and hence reasonable. In addition, the elementary rule that the burden of showing to the contrary rests on the appellant or the person seeking to set aside or annul the rates is also given express statutory recognition and judicial approval. Section 10535, R. S. 1919; Cinn. etc., Ry. Co. v. Int. Com. Com., 206 U. S. 154, 27 Sup. Ct. 648, 51 L. Ed. 995; Int. Com. Com. v. U. Pac. R. R., 222 U. S. loc. cit. 546, 32 Sup. Ct. 108, 56 L. Ed. 308; State Pub. U. Com. v. Springfield Gas Co., 291 Ill. 209, 125 N. E. 891.

The statutes declaring rates fixed by the Commission to be prima facie reasonable until that presumption is removed by one seeking their annulment are but a proper recognition of the power and purpose of the Commission, without which its acts would be mere empty declarations, whose effective operation would, in each instance, have to await judicial approval. Such a conception of the nature and powers of the Commission is wholly un-
1105 authorized. Organized, as the statute creating the Commission clearly declares, for the purpose of supervising and regulating public service corporations, the courts, in reviewing its actions, proceed upon the assumption that the experience of the members of the Commission has especially fitted them for dealing with questions concerning the powers and activities of such corporations; and, despite the fact that the entire evidence will be reviewed, much con-

sideration is to be given to the findings of the Commission, which, if reasonable, and neither arbitrary nor capricious, will be deferred to. N. Y. & Q. Gas Co. v. McCall, 245 U. S. loc. cit. 347, 38 Sup. Ct. 122, 62 L. Ed. 337.

The foregoing interpretation of the statutes as to the power of this court to review the rulings of the Public Service Commission is in harmony with our former declarations on this subject, and accords with the power declared by the Supreme Court of the United States in reviewing the findings and orders of the Interstate Commerce Commission, as is attested by many cases. Interstate Commerce Commission v. Ill. Central R. Co., 215 U. S. 452, 30 Sup. Ct. 155, 54 L. Ed. 280; Baltimore & Ohio R. Co. v. Pitcairn Coal Co., 215 U. S. 481, 30 Sup. Ct. 164, 54 L. Ed. 292; Kansas City So. Ry. Co. v. United States, 231 U. S. 423, 34 Sup. Ct. 125, 58 L. Ed. 296, 52 L. R. A. (N. S.) 1; Louisiana R. R. Com. v. Cumberland T. & T. Co., 212 U. S. 414, 29 Sup. Ct. 357, 53 L. Ed. 577; Int. Com. Com. v. Union Pacific R. Co., 222 U. S. 541, 32 Sup. Ct. 108, 56 L. Ed. 308; Cedar Rapids Gas Co. v. Cedar Rapids, 223 U. S. 655, 32 Sup. Ct. 389, 56 L. Ed. 594.

The case of Louisiana Railroad Commission v. Cumberland T. & T. Co., 212 U. S. loc. cit; 421, 29 Sup. Ct. 357, 53 L. Ed. 577, is not unlike that at bar. The contention was there made that the rates established were so low as to be confiscatory, and that they were not established upon investigation into the question of their
1106 sufficiency, but by a mere arbitrary conjecture of the Commission, and that the order made by it establishing the rates was illegal and void; hence that there was no presumption as to the correctness of the rates such as generally obtains in relation to rates adopted by the Legislature of a Commission appointed by it. The evidence adduced was of the same character as that before the Commission in the instant case, though not so complete. It consisted, as in this case, of the reports of the company filed with the Commission showing generally the character and operation of the business of complainant, its income, operating expenses, and investments in Louisiana. The court disposed of this contention in the following language:

"Now it may be true that these returns did not contain all the data upon which a very close and accurate judgment could be based as to the rates that ought to be charged by complainant, under all the circumstances. This is only saying the order may have been erroneous or based upon insufficient evidence, which is no more than saying that upon the investigation the commission may have come to a mistaken conclusion by reason of erroneous inferences from the evidence furnished by complainant's own returns, but that is far from showing that the commission had by a merely arbitrary order, promulgated certain rates without making the slightest effort to obtain any knowledge whatever upon the subject. It did not lose jurisdiction by reason of the mistakes it may have made, and as a result the rates adopted were not merely arbitrary conjectures, but based on reasons which while they may have been insufficient, cannot be described as resulting in a decision wholly without evidence to sup-

port it. The rates, therefore, promulgated must be regarded as prima facie fair and valid, or, in other words, the onus was upon the complainant to show that they were what it asserts, confiscatory or unreasonable."

As to what is a reasonable rate, in any given case, is, as we have stated, a question of fact calling for the exercise of the common sense and sound judgment of the Commission, which is not bound by any hard and fast rule, nor required to fix rates according to any general formula. Even the question as to what per cent of
1107 the value of the property in use should be allowed as a return must be made dependent upon the facts and circumstances of the particular case. Duluth Street Ry. Co. v. R. R. Com., 161 Wis. 245, 152 N. W. 887; State Pub. Util. Com. v. Springfield Gas & Elec. Co., 291 Ill. 209, 125 N. E. loc. cit. 896.

The burden of proof as to the reasonableness of the rates resting upon the appellant, it became incumbent upon it to show that the local exchanges were allotted a sum sufficient to reimburse them for services rendered in receiving and transmitting interstate calls—not only those made but those received in this state. Otherwise local subscribers would be required to pay the expense of interstate messages. Without the information, which has not been furnished by appellant, as to what compensation is allowed local exchanges for their services in connection with interstate business, and the basis on which this compensation is fixed, no proper solution can be obtained from the data furnished by appellant as to its local rates in Missouri.

In the case of the Louisiana R. R. Com. v. Cumb. T. & T. Co., supra, a United States Circuit Court enjoined the enforcement of rates fixed by the Louisiana Commission; upon a review of this ruling by the United States Supreme Court the decree of the Circuit Court was reversed and a new trial ordered. The Commission contended in the trial court that the telephone company raised more money in certain years for depreciation than was actually used for the purpose, and that the excess was carried to the capital account, and was a part of the property upon which the company was seeking a return. The Circuit Court held that the proof was insufficient to sustain this contention, but the United States Supreme Court, in its review on appeal, ruled that the burden of proving that this had not been done was on the telephone company, where the books showed that such an excess had been collected, and that this proof had not been made.
1108 The rule thus fixing the burden of proof finds its appropriate application in the instant case. The testimony shows that 25% of the total charge for transmitting a long-distance call was allotted to the exchange where the call originated, but that nothing was allowed on calls received. Whereas on long-distance messages originating with a local exchange, and transmitted over the American Tel. & Tel. Company's lines, but 15% was allowed, the charge in no event was to exceed 20¢ per call; and upon such messages delivered by local exchanges nothing was allowed. The evidence further discloses that the American Tel. & Tel. Co. controls the stock of the appellant; that, at the time of this hearing, it paid, and for

some years prior thereto had paid, an annual dividend of 8% on its stock; that when the government took over the telephone lines, it contracted with the American Tel. & Tel. Co., and not with the subsidiary companies; that such contract did not contemplate a return separate and apart from that made to the subsidiary companies; that the parent company has two lines running east and west, and lines running north and south, and diagonally across the state; and that the appellant connects with these lines and places its local exchanges at the disposal of same for the purpose of transmitting outgoing and receiving incoming calls; that a great portion, if not all, of this is interstate business. For its service in this behalf a local exchange of the appellant receives but 15% commission on calls originating with it, with a maximum charge of 20¢, and no compensation for calls delivered through it.

The appellant allots to its local exchanges for its own long-distance business 25% of the tolls collected. This, said appellant's general manager, "is the standardized figure generally accepted as a fair compensation to the local company for the work done in connection with toll messages." The Commission desired to ascertain and was entitled to know why 25 per cent of the toll was allotted to a
1109 local exchange by the appellant for long distance messages transmitted over its own lines, while but 15 per cent, with a maximum charge of 20 cents, was allotted for long distance messages transmitted over the parent company's line. The investigation developed the fact that these allotments were arbitrary, which means that these rates were fixed without reference to the amount of service actually rendered by local exchanges in transmitting and delivering long distance messages over the parent company's wires. As compared with the 25 per cent charge, it appears upon its face to be insufficient. To the extent that it is insufficient, it is a burden upon the local business. It was incumbent upon the appellant to show the fairness of these charges, and that they were proper allotments. This is the rule, both under the statute and the cases cited, and this the appellant failed to do. Its failure, as contended by respondent—which contention we regard as well founded—constitutes a tenable ground for not disturbing the order of the Commission, provided that order is, on its face, reasonable. Cumb. T. & T. Co. v. R. R. Comm. La. (C. C.) 156 Fed. 823; R. R. Comm. v. Cumb. T. & T. Co., 212 U. S. 414, 29 Sup. Ct. 357, 53 L. Ed. 577. Probative force is given to this conclusion in view of the relation of the appellant to the American Telephone & Telegraph Company.

Allowance being made for the interest on appellant's bonded indebtedness, the gross return upon its property at the Commission's valuation is 12.81 per cent. Allowing 6 per cent for depreciation, the net return is 6.81 per cent. This, to our mind, is a fair return, and under no reasonable construction can be said to be confiscatory. The United States Supreme Court has held a less or a like amount ample compensation in cases similar to that at bar. A smaller return was approved in Wilcox v. Con. Gas Co., 212 U. S. loc. cit. 48, 29 Sup. Ct. 192, 53 L. Ed. 382, 48 L. R. A. (N. S.) 1134,
1110 15 Ann. Cas. 1034; and in Lincoln Gas & Elec. Light Co. v.

Lincoln, 250 U. S. loc. cit. 267, 39 Sup. Ct. 454, 63 L. Ed. 968, a scant 7 per cent was held sufficient, and the court refused to interfere with that rate as fixed by an ordinance. Furthermore, the Congress directed the Interstate Commerce Commission to allow the railroads a return of but 5½ per cent upon their valuation for a term of two years from March 1, 1920. Interstate Commerce Commission Act (Govt. Ed., 1920) §15*a*, p. 48.

In addition to the regular monthly rates paid by all subscribers, appellant contends that it should be permitted to levy against all new subscribers a connection charge to be paid before service will be rendered. This contention is based upon the theory that a number of subscribers use telephones but a short time, and should be required, in addition to the usual exchange rates, to pay additional charges towards reimbursing the company for the cost of installations. In short, after being allowed a reasonable return for its service, it is contended that it should be permitted to mulct its new subscribers for one of the possible losses incident to the nature of its business. The effect of the allowance of this contention would be to require new subscribers to pay more for the same service than is paid by those who became subscribers prior to the levy of the service connection charge. This would constitute a discrimination not authorized by the statute creating the Commission and defining its powers relating to telegraph and telephone companies. Article 5, c. 95, R. S. 1919. This statute, both in *tis* context and subject-matter, not only indicates, but provides, that the rates, rentals, and charges made by such companies, when approved by the Commission, shall be for services rendered, and hence uniform in amount when of like character. Both of these requisites would be violated in the recognition of the charge here contended for. It might well be held that the schedule of rates authorized by this statute comprehends and constitutes the compensation authorized to be charged by these companies under several well-recognized rules of statutory construction, and in view of the fact that section 10496, R. S. 1919, provides that such instrumentalities and facilities shall be provided by the companies as are in all respects just and reasonable. No other rational application can be made of this requirement than that it has reference to senders and receivers without the use of which telephone service is impossible. But it is not necessary to rule upon this suggested limitation of the statute here. Subdivisions 2 and 3 of said section 10496, supra, embody in their terms a definite prohibition against special rates, rebates, or undue or unreasonable preference. We have shown that this proposed charge discriminates against the new subscriber to his prejudice, and hence merits condemnation. We so ruled in regard to a similar question in State ex rel. Columbia Tel. Co. v. Atkinson, 271 Mo. loc. cit. 36, 195 S. W. 741. The ground stated therein as to the invalidity of the charge for installation was, it is true, different in some respects from that stated here, but each is based upon the unreasonableness of the charge which, under either state of facts, will suffice to authorize the overruling of the contention. Bradford v. Citizens' Tel. Co., 161 Mich. 385, 126 N. W. 444, 137 Am. St. Rep. 513.

3. Course Pursued in Fixing Rates.—As shown from the statement of facts, the rates fixed, of which appellant complains, were temporary, the purpose of the Commission being to regard the exchanges as separate units, and to determine the value of appellant's property at each according to the conditions there existing. This had been done in regard to the exchanges at St. Louis, Springfield and Caruthersville. Until such examinations had been made and the values ascertained at other exchanges, the purpose of the Commission was to continue in force the rates fixed by it. That
1112 these further examinations were contemplated is evident from the Commission's orders. Its purpose, thus clearly defined, lends little countenance to the contention that the Commission acted or was contemplating arbitrary or capricious action, and its proposed course is referred to only to exemplify that fact.

In addition, the Commission's order requiring the appellant to show cause why it continued to charge the rates fixed by the Postmaster General instead of those fixed by the Commission further attests the fact that its purpose was not to proceed arbitrarily or capriciously, but to accord the appellant a hearing and afford it an opportunity to demonstrate, if the facts warranted, that the established rates were unreasonable. In passing, it may be said that this order was purely one of grace on the part of the Commission, prompted evidently by a desire for fairness, and not a prerequisite to the exercise of its power in enforcing its order then in force.

Preliminaries and irrelevant matters disposed of, we are confronted with the question, the answer to which, in addition to what has been said, will be determinative of this case, viz.: Was the valuation of appellant's property by the Commission a fair one, and are the rates fixed as a consequence of such valuation reasonable? As set forth at length in the statement of facts, the Commission, as a basis for its total valuation, made an examination of the property of three of appellant's exchanges at St. Louis, Springfield, and Caruthersville. To determine these values it took into consideration in each instance the original cost of the plant, the appellant's engineers' estimate of the cost of reproduction as of that date, the depreciation, and the working capital for a plant of that capacity. While these items were given primary consideration, the fact that the plants were going concerns was not ignored, and the additional items of engineering, supervision, interest during construction, in-
1113 surance, and promotion and development expenses were also included. In short, it is apparent that the Commission sought to include within its purview all elements of value, tangible and intangible.

The Commission, having before it the valuations of the three properties ascertained in the manner stated, employed the result obtained in testing the correctness of the appellant's estimates of the cost of reproduction in respect of its other exchanges, and for the purpose of reaching a total valuation adapted to existing conditions, reduced the appellant's estimate of the value of its entire property in the same ratio as its estimates of its properties at St. Louis, Springfield, and Caruthersville had been reduced in determining the value

of those plants for rate-making purposes. The Commission reached a like result by taking the book value of appellant's property, or, as will be found specifically set forth in the statement of facts, by taking the total amount of the value of appellant's entire property, including working capital, and deducting therefrom property not used, working capital, and depreciation reserve, and to this remainder adding 10 per cent for intangibles. Taking these different methods into consideration the Commission fixed the value of appellant's property in this state at $20,400,000. After a laborious review of the record we regard this valuation as reasonable and amply supported by the testimony. The course pursued by the Commission in reaching this valuation followed the rule prescribed in Smyth v. Ames, 169 U. S. loc. cit. 546, 18 Sup. Ct. 434, 42 L. Ed. 819, in which it was said:

"We hold, however, that the basis of all calculations as to the reasonableness of rates to be charged by a corporation maintaining a highway under legislative sanction must be the fair value of the property being used by it for the convenience of the public. And in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stocks, the present, as compared with
the original, cost of construction, the probable earning ca-
1114 pacity of the property under particular rates prescribed by
statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property. What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience. On the other hand, what the public is entitled to demand is that no more be exacted from it for the use of a public highway than the services rendered by it are reasonably worth."

Later cases determined by the United States Supreme Court are of like import. San Diego Land Co. v. National City, 174 U. S. loc. cit. 755, 19 Sup. Ct. 804, 43 L. Ed. 1154; Cotting v. Kansas City Stock Yards Co., 183 U. S. loc. cit. 89, 22 Sup. Ct. 30, 46 L. Ed. 92; Minnesota Rate Cases, 230 U. S. loc. cit. 434, 33 Sup. Ct. 279, 57 L. Ed. 1511, 48 L. R. A. (N. S.) 1151, Ann. Cas. 1916A, 18; Wood v. Vandalia R. Co., 231 U. S. loc. cit. 7, 34 Sup. Ct. 7, 58 L. Ed. 97.

Doctrinaires may have criticized the basis on which the Smyth-Ames and subsequent cases rest, but it has not been overruled nor subjected to serious judicial criticism. To vary from this rule, which comprehends within its scope all reasonable items of value and elements of cost, and to hold, as is insisted by appellant, that the rates to be established should be based upon reproduction cost new, less depreciation, estimated at a time when prices were at high tide and rapidly fluctuating, does not accord with reason, and would be unjust to the public. The reasoning of the respondent in opposition

to this insistence meets with our approval, and is therefore appropriate in this connection:

"We are unable to discern how any well-balanced mind can adjust itself to the theory that the proper valuation to be placed upon a utility plant for rate-making purposes may be obtained by making an inventory of its component parts already in place, and estimating their aggregate cost by giving to each part the value that it has on the market as a detached article ready for use anywhere. Included in such a scheme is the proposition that the public must pay a return upon, not the actual sums spent for labor at the time the plant was assembled, but upon such sums for labor as would be re-
1115 quired to assemble the plant today.

"In the main, the constituent parts of an assembled plant of a utility in operation, have been dedicated to a specific use in which the public has an interest. They are available for no other use, and are without any considerable value to all persons except the company operating the plant and the public served by it. A telephone post, for instance, deep and firmly set in the ground, is dedicated to a particular use, and has no market value as a post. It is not on the market. So it is with the wires and cables of a telephone company, and so it is with respect to all the constituent parts of a plant except its real estate and its buildings, and frequently these buildings are designed for the company's peculiar use and are worthless for any other use."

The lucid distinction between industrial valuation and public utility valuation made by Dr. John H. Gray, of the Department of Economics of the University of Minnesota, in the Public Utilities Magazine, January, 1917, is persuasively pertinent to the matter at issue. His conclusions are as follows:

"For better or for worse, both in our philosophy and in our law, we have taken what are known as public utilities out of the category of unrestricted private property. It is very true that, in a purely technical sense, in law, they remain private property; but this has not the slightest economic significance, since the law has essentially taken from this property the chief attribute of private property—the chance of speculative gains. The doctrine of a fair return in public utilities forever separates such property economically from ordinary private property.

"In fact, we shall never come to a clear view of the object or reason for regulation until we make the clear distinction between one's rights over property which is devoted to a public use, and one's rights over this same property when it ceases to be so dedicated.

"The methods of arriving at a fair value are entirely different in the two cases. In the one case the property is subject to an incumbrance; in the other it is unincumbered. In the one case it is free to seek the most profitable employment; in the other it is restricted to a single use.

"This is the foundation stone of regulation, and must be considered as a part of every contract, and every charter, and every act of a public utility."

1116 Of like persuasive force is the fact that not only the respondent, but other state commissions, have adopted the reproduction cost new, less depreciation, plus the value of the plant as a going concern, as bases in reaching a valuation for rate-making purposes, but in so doing they have uniformly used normal pre-war prices in estimating the cost of labor and material. Money actually spent and materials purchased at war-time prices were so allowed, as was done in this case; but such a valuation as is insisted upon by appellant, based upon war-time or abnormal prices, has been considered as grossly unjust, and has not been followed. The curious will find the cases in this behalf cited in the respondent's brief.

The appellant further contends that the Commission should have allowed the full amount paid by it to the American Tel. & Tel. Co. for rental on the receivers, transmitters, and induction coils used by the appellant, and essential to the service rendered by it. This contention received consideration by the Commission, not in the allowance of the full amount claimed, but in the following manner: Evidence had been taken in regard thereto in the St. Louis Case, and it was found, after allowing for repairs and granting 10 per cent for depreciation, that the cost to appellant for rental would be 55 per cent less than the 4½ per cent allowance on the gross revenue, as claimed by the appellant. Upon the basis thus established the rental allowance for the instruments used in plaintiff's entire system in this state was estimated, and the result ascertained was taken into account in determining the reasonableness of the rates. Public Service Com'n v. Southwestern Bell Tel. Co., 8 P. S. C. R. 494. We are not prepared to say from the evidence adduced that the method adopted by the Commission was not a fair one. While not determining the right of the appellant to a reasonable allowance for rental of the instruments mentioned, it does not appeal to us that the percentage basis, which seems to be purely arbitrary, is either scientific
1117 or satisfactory. An investigation of this subject shows no unanimity of either judicial or administrative opinion on this subject. The percentage method has, we find, in the main, been approved by 2 courts and 11 commissions; but 4 or 5 other commissions have either disapproved the method or the amount claimed has been reduced or disallowed for rate-making purposes. On account of differences in the facts the rulings or findings in these cases are not decisive of the matter at issue, and hence their citation is unnecessary.

Without the factilities afforded by the instruments in question, the telephone companies could not do business. The question presents itself, therefore, whether the very instrumentalities which enable the appellant to render its business profitable, or least give it an earning capacity, should be considered in determining the charges or rates it exacts for its service. The reason and justice of the rental claim, however, need not be taken into consideration here, as a fair rental allowance was made by the Commission, and there is no just ground of complaint in this behalf.

4. Conclusion. Reviewing the appellant's assignments of error, as we have done in reaching the foregoing conclusions to determine the correctness of the judgment of the circuit court, we find: That the rates established by the Commission were lawful, just, and reasonable, and hence not in violation of any law, organic or statutory; that appellant, as a condition precedent to the determination of the reasonableness of its rates, was not entitled to a credit for the full sum paid by it to the American Tel. & Tel. Co. as a rental; that the manner in which the Commission reached its conclusion in regard to the unreasonableness of appellant's rates is not subject to just criticism; that the Commission's ruling in refusing to allow
1118 the appellant to charge for installation, moving, and changing of names was not error, in view of the reasonableness of the rates established; that the cost of establishing plaintiff's business and making its plants going concerns on the basis insisted upon by appellant was properly disallowed by the Commission in estimating the fair and reasonable value of appellant's property; that the Commission's orders in this behalf are supported by the evidence, and are in conformity with the law, and hence are neither discriminatory, unreasonable, or unlawful; that the value of appellant's "intangibles," as ascertained by the Commission, accords with the facts; that the rates established by the Postmaster General, except for the purpose stated, are determinative of no issue here involved; that the Commission's total valuation of appellant's property was arrived at as to method, time of estimation, and amount, in a regular and authorized manner, and afforded substantial basis for the fixing of the rates and the consequent judgment of the circuit court affirming the Commission's action.

In the absence of prejudicial error, the judgment of the circuit court is affirmed, and it is so ordered.

1119 Graves, J., concurs in separate opinion, in which Woodson and Higbee, JJ., concur.

James T. Blair, J., concurs in separate opinion, in which Higbee, J. concurs.

Elder, J., concurs in result.

David E. Blair, J., not sitting.

GRAVES, *J.:*

I concur in the opinion and the result thereof, with one exception. My objection to the opinion relates to that portion of the opinion which denominates installation charges as unlawful. The Commission in its majority opinion held that we had so ruled in State ex rel. Columbia Tel. Co. v. Atkinson, 271 Mo., loc. cit. 36, 195 S. W. 741, and the opinion of my Brother relies upon that case, and the case of Bradford v. Citizens' Tel. Co., 161 Mich., 385, 126 N. W. 444, 137 Am. St. Rep. 513. Neither of the cases covered the question of installation, removal, and other kindred charges involved in this controversy. It is said that the installation charge discriminates against the short-term user of a telephone, in that it

requires him to pay more for the services which he receives. In my judgment the failure to allow such charge discriminates against the long-term user of the phone, and to obviate such discrimination, reasonable charges for installation, removal, etc., should be sanctioned by the Commission. To fix a rate the Commission must have in view (1) the value of the property in the public service, (2) the gross earnings of the property, (3) the gross expenses of operation and upkeep, and (4) a fair return to the owners. The rate established must reflect all these things. Every installation and removal is an item of expense, and must find a place in the expense account of the business. When it does find this place, it effects the rate fixed. The additional expenses means an addition to the rate, and this addition must be borne largely by the long-term users of phones.

To illustrate, a man blows into one house and orders a
1120 phone, the installation of which goes into the expense of the business. The next month he goes to another house, and additional expense of removal is occasioned. He continues these moves for a year, and in the end the phone company has paid out more upon this subscriber than it gets from him. The long-term users of phones have to pay this expense, because it is reflected, or should be reflected in the rate which they pay for the phones they use. So that the failure to allow such installation and removal charges in fact discriminates against the long-term users (estimated at 85 per cent of the total number), rather than the short-term user. In my judgment, the idea of charges in force by the general government with reference to these things, are just and equitable, and should receive the approval of our Public Service Commission. But the majority of the Commission says and my learned Brother says that we outlawed such charges in the Columbia case, 271 Mo. loc. cit. 36, 195 S. W. 741, supra. The facts of that case do not bear out that contention. The $3 charge there was in the nature of a deposit to induce the continuance of the use for a year, because at the end of a year he received full credit for the advanced $3. The charge here involved is an absolute payment, which never gets back to the subscriber. The Columbia case discusses no question involved here and in no wise supports the Commission or my learned Brother. If it did support either, it should be overruled; but it does not, and may be well enough on the questions involved in that case.

The Michigan case, mentioned supra, does not deal with installation or removal charges at all. There the company had a great number of subscribers under contracts to pay for home phones at the rate of $15 and business phones at the rate of $24. It then raised its rates to $18 and $30, respectively, for all new subscribers. It was therefore charging two rates for the same service. The old patrons (some with 10-year contracts) paid $15 and $24. The new subscribers were required to pay $18 and $30. Phones "were placed

free to all patrons, whether new or old subscribers." It was
1121 held that this constituted a discrimination in violation of a Michigan statute, and the opinion is sound. But this case touches neither side nor bottom of the question here involved.

If the rate allowed by the Commission is a reasonable rate for the Company, this question may not be in this case except in a very limited way. But the opinion condemns as unlawful these installation, removal and similar charges, and to this I do not agree. On the contrary, the refusal of the Commission to establish and recognize such charges is the thing that works the wrong. Nor does the charge violate any provision of the Public Service Commission Act. There refusal comes nearer working the discriminations condemned by that act. I therefore concur, with the reservation herein set forth.

Higbee and Woodson, JJ., concur in these views.

JAMES T. BLAIR, *J.* (concurring):

I do not concur in that part of the opinion which seems to adhere to certain former decisions to the effect that in a rate case which has come here from the Public Service Commission this court will, on its own view of the weight of the evidence, overturn findings of fact made by the Commission and supported by substantial evidence. In the decision (Int. Com. Com. v. Union Pac. R. Co., 222 U. S. loc. cit. 547, 32 Sup. Ct. 108, 56 L. Ed. 308) from which the opinion takes the summary of what is to be considered in determining the reasonableness of a finding of fact to the Commission is to be found a holding which contradicts the conclusion which seems to be reached in the opinion in this case, and shows that the opinion misinterprets that decision in summarizing it. In the opinion in that case, immediately following the summary partially reproduced in the opinion in this, is the following:

"In determining these mixed questions of law and fact the court confines itself to the ultimate question as to whether the Commission acted within its power. It will not consider the expediency or wisdom of the order, or whether, on like testimony, it would have made a similar ruling. 'The findings of the Commission are made by law prima facie true, and this court has ascribed to them the strength due to the judgments of a tribunal appointed by law and informed by experience. Ill. Cent. v. I. C. C. 206 U. S. 441. Its conclusion, of course, is subject to review, but when supported by evidence
1122 is accepted as final; not that its decision, involving as it does so many and such vast public interests, can be supported by a mere scintilla of proof—but the courts will not examine the facts further than to determine whether there was substantial evidence to sustain the order."

In the case cited in the foregoing quotation it was also said:

"And in any special case of conflicting evidence a probative force must be attributed to the findings of the Commission, which, in addition to 'knowledge of conditions, of environments and of trans-

portation relations,' has had the witnesses before it and has been able to judge of them and their manner of testifying. In the case at bar these considerations are reinforced by a concurrent judgment of the circuit court." 206 U. S. 441, 27 Sup. Ct. 700, 51 L. Ed. 1128.

In I. C. C. v. Ill. Cent. R. R. 215, U. S. loc. cit. 470, 30 Sup. Ct. 160, 54 L. Ed. 280, cited in the majority opinion, appears the following:

"Plain as it is that the powers just stated are of the essence of judicial authority and which, therefore, may not be curtailed, and whose discharge may not be by us in a proper case avoided, it is equally plain that such perennial powers lend no support whatever to the proposition that we may, under the guise of exerting judicial power, usurp merely administrative functions by setting aside a lawful administrative order upon our conception as to whether the administrative power has been wisely exercised. Power to make the order, and not the mere expediency or wisdom of having made it, is the question."

In B. & O. v. Coal Co., 215 U. S. loc. cit. 494, 495, 30 Sup. Ct. 164, 54 L. Ed. 292, also cited in the majority opinion, the rule in the next previously cited case was approved. It was also approved in Knapp v. Trust Co., 216 U. S. loc. cit. 554, 30 Sup. Ct. 412, 54 L. Ed. 610, which the majority opinion next cites. The decision in I. C. C. v. Railway, 168 U. S. loc. cit. 175, 18 Sup. Ct. 45, 42 L. Ed. 414, is not in point. Interpreted as it is in the majority opinion, it is overruled by the other cases cited therein. In Van Dyke v. Geary, 244 U. S. loc. cit. 49, 37 Sup. Ct. 487, 61 L. Ed. 973, also cited, the court said: "We cannot say 'that it was impossible for a fairminded board to come to the result * * * reached'"—and affirmed the judgment. There is nothing in Penn. R. R. v. Towers, 245 U. S. 638 Sup. Ct. 2, 62 L. Ed. 117, L. R. A. 1918C, 475, which contravenes anything in the above excerpts. N. Y. & Q. Gas Co. v. McCall, 245 U. S. loc. cit. 348, 38 Sup. Ct. 122, 62 L. Ed. 337, is in harmony with the other cases cited from the same court. In K. C. So. Ry. v. U. S. 231 U. S. loc. cit. 456, 34 Sup. Ct. 136, 58 L. Ed. 296, 52 L. R. A. (N. S.), 1, the court said of the Interstate Commerce Commission:

1123 "So long as it acts fairly and reasonably within the grant of power constitutionally conferred by Congress, its orders are not open to judicial review."

In I. C. C. v. Railroad, 222 U. S. loc. cit. 555, 32 Sup. Ct. 114, 56 L. Ed. 308, the court concluded its opinion thus:

"Considering the case as a whole, we cannot say that the order was made because of the effect of the advance on the lumber industry; nor because of a mistake of law as to presumptions arising from the long continuance of the low rate, when the carrier was not earning dividends; nor that there was no evidence to support the finding. If so, the Commission acted within its power and, in

view of the statute, its lawful orders cannot be enjoined." (Italics ours.)

Cedar Rapids Gas Co. v. Cedar Rapids, 223 U. S. 655, 32 Sup. Ct. 389, 56 L. Ed. 594, is not out of harmony with the rest. Neither is La. R. R. Co. v. Tel. Co., 212 U. S. loc. cit. 421, 424, 29 Sup. Ct. 357, 53 L. Ed. 577, et seq. In State Public U. Com. ex rel. v. Gas & Electric Co., 291 Ill. 209, 125 N. E. 891, also cited, it was held:

"The fixing of rates is not a judicial function, and the right to review the conclusion of the Legislature or of an administrative body, acting under authority delegated by the Legislature, is limited to determining whether or not the Legislature or the administrative body acted within the scope of its authority, or the order is without substantial foundation in the evidence."

In that case various decisions of Illinois and other states to a like effect are cited. In Herrmann v. Newtown Gas Co., P. U. R. 1918D, loc. cit. 611 et seq., will be found scores of decisions of the same kind, from many jurisdictions. In fact, the previous decisions of this court sound practically the only discordant note. No effort is here made to examine the various decisions from other jurisdictions cited in the majority opinion further than to show that they do not support any view that this court can examine the evidence and overturn the finding of the Commission on the single ground that it is against what this court deems to be the weight of the evidence.

Counsel on both sides of this case invoke the rule of the cases as that rule appears from the above quotations. Counsel for
1124 appellant cite more than 50 decisions as sustaining the rule. A few quotations from these may be pertinent:

"The principle on which the court acts in determining whether or not an order of the Commission is reasonable, have been the subject of much controversy, but the law on that subject is now pretty well settled. The Legislature never intended that the court should put itself in the place of the Commission, try the matter anew as an administrative body, substituting its findings for those of the Commission. A statute which so provided would be unconstitutional as a delegation to the judiciary of non-judicial powers. (Citing numerous cases.) * * * The courts must not usurp legislative or administrative functions by setting aside a legislative or administrative order on their own conception of its wisdom." State v. Great Northern Ry. Co., 130 Minn. 57, 153 N. W. 247, Ann. Cas. 1917B, 1201.

"If the order made by the Commission does not contravene any constitutional limitation, is within the constitutional and statutory authority of that body, and not unsupported by testimony (italics ours), it cannot be set aside by the courts, as it is only the exercise of an authority which the law vests in the commission." Penn. Co. v. U. S. 236 U. S. loc. cit. 361, 35 Sup. Ct. 373, 59 L. Ed. 616.

With respect to the function of a court in reviewing an administrative order, the Court of Appeals of Maryland (Penn. Co. v. Towers, 126 Md. 59, 94 Atl. 330, Ann. Cas. 1917B, 1144) quoted with approval the following from the decision in M., St. P. & S. S. Ry. v. R. R. Com., 136 Wis. 146, 116 N. W. 905, 17 L. R. A. (N. S.) 821:

"The function of a court is not to determine whether rate or service fixed by it is reasonable and just, but to determine whether the order is unreasonable or unlawful. If the order is found by the court to be such that reasonable men might well differ as to its correctness, it cannot be said to be unreasonable."

This judgment was affirmed in Penn. Co. v. Towers, 245 U. S. 6, 38 Sup. Ct. 2, 62 L. Ed. 117, L. R. A. 1918C, 475. With respect to the Interstate Commerce Commission it was said by a District Court (three judges sitting) in St. L. & S. W. Ry. Co. v. U. S. (D. C.) 231 Fed. loc. cit. 675, that:

"Whatever view the court might entertain upon it, or upon the expediency or wisdom of the order, is not material. The court cannot interfere with the rates fixed, or practice established, by the Commission, unless it is made plainly to appear that the 1125 orders are void, as violative of the Constitution, or wanting in conformity to statutory authority, or has been arbitrarily exercised; and the duty of the court is to determine the sole question, whether or not the order of the particular case is based upon substantial evidence, heard and considered by the commission."

In C., M. & St. P. Ry. Co. v. Com., 268 Ill. 49, 108 N. E. 729, the Supreme Court of Illinois said:

"The power to fix rates is legislative, whether exercised by the Legislature, directly or by an administrative body under delegated authority. The fixing of rates is not a judicial function, and the right to review the conclusion of the Legislature or an administrative body is limited to determining whether the board acted within the scope of its authority or the order is without foundation in the evidence, or a constitutional right of the carrier has been infringed upon by fixing rates which are confiscatory or insufficient to pay the cost of the traffic and return the carrier a reasonable profit on the investment."

"Reviewing courts will examine the facts upon which the order is based, and if there is substantial evidence to sustain the order—not a mere scintilla of proof—the order will be sustained." Chicago Motor Bus Co. v. Chicago Stage Co., 287 Ill., 320, 122 N. E. 477.

In State Public Utilities Com. v. R. R. Ass'n., 281 Ill. 181, 118 N. E. 71, the rule laid down in C., M. St. P. Ry. Co. v. Com., supra, is applied, and many cases cited in its support. In City v. Appleby, 219 N. Y. 76, 113 N. E. 797, the same principle was approved. This judgment was affirmed in 245 U. S. 345, 38 Sup. Ct. 122, 62

L. Ed. 337. In Lima Tel. & Tel. Co. v. Com., 98 Ohio St. 110, 120 N. E. 330, it was said:

"It is well settled that this court will not substitute its judgment for that of an administrative body * * * within its province. Before the court will interfere with an order of the Public Utilities Commission it must appear from a consideration of the record that the action was unlawful or unreasonable. Hocking Valley Ry. Co. v. Com., 92 Ohio St. 362."

The same view (as in the preceding decision) as to its functions in reviewing an order of the Public Service Commission of
1126 Pennsylvania was taken by the Supreme Court of that state in Borough v. Water Co., 260 Pa. 289, 103 Atl. 744. Numerous decisions are cited. Other decisions which may throw some light on the matter, and which also are cited by appellant, are: Sayers v. Railroad, 90 Vt. 201, 97 Atl. 660, Ann. Cas. 1918B, 1050; Oshkosh Waterworks Co. v. Com., 161 Wis. 122, 152 N. W. 859, L. R. A. 1916F, 592; San Joaquin L. & P. Corp. v. Com., 175 Cal. 74, 165 Pac. 16; Pub. Service Com. v. Ry. Co., 122 Md. 393, 90 Atl. 119; State v. Ry. Co., 71 Fla. 433, 71 South. 543.

Counsel for respondent, as already stated, join appellant's counsel in contending for the same rule. Some decisions which announce the same doctrine are omitted because of constitutional or statutory provisions in the state in which they were rendered which account for them independently of the doctrine itself. Further the question in decisions affecting orders of the Interstate Commerce Commission decisions, though analogous, is not identical with the question in this case. It is nevertheless true that the overwhelming weight of authority, in fact practically all the decisions, supports the rule. The decisions cannot be read without the conclusion being induced that an order of the Public Service Commission is, when supported by substantial evidence, immune from attack in so far as the finding on the facts is concerned. These cases make it plain that the Legislature cannot constitutionally confer power upon this court to review the weight of the evidence in passing upon the validity of an order of the Commission. That would amount to transforming the court, pro hac vice, into an administrative board, and thereby taking it out of the field of its constitutional power, and, for the time, making it a part of another magistracy. The Legislature can no more do this than it can confer a part of this court's judicial authority upon the executive. Our former decisions are violative of this principle.

Heretofore, in some of our decisions, reliance has been placed
1127 upon the statute as justifying the substitution by this court of its judgment for that of the Commission on the weight of the evidence as to the facts found by that body. As shown by the cases cited and referred to, this amounts simply to the usurpation of administrative functions. The statute could not confer such power even had that been attempted. The Legislature cannot impose upon this court and this court cannot accept as a court, duties of a legislative or quasi legislative character, such as rate making for public

service corporations. But the statute does not attempt to confer such power. Sections 10534 and 10535, R. S. 1919, read as follows:

"Sec. 10534. All rates, tolls, charges, schedules and joint rates fixed by the Commission shall be in force and shall be prima facie lawful, and all regulations, practices and services prescribed by the Commission shall be in force and shall be prima facie lawful and reasonable until found otherwise in a suit brought for that purpose pursuant to the provisions of this chapter.

"Sec. 10535. In all trials, actions, suits and proceedings arising under the provisions of this chapter or growing out of the exercise of the authority and powers granted herein to the Commission, the burden of proof shall be upon the party adverse to such Commission or seeking to set aside any determination, requirement, direction or order of said Commission, to show by clear and satisfactory evidence that the determination, requirement, direction or order of the Commission complained of is unreasonable or unlawful as the case may be."

Under this last section the question presented in this court on an issue of fact is whether there is "clear and satisfactory evidence" that the action of the Commission was (1) unreasonable or (2) unlawful. So far as I have been able to find, in no decision in this state has it ever been held, prior to the establishment of the Commission, that an order of any administrative body was either unreasonable or unlawful merely because it was not supported by what seemed to the reviewing court to be the weight of the evidence.

In such cases the test of reasonableness and unlawfulness, so
1128 far as its support by evidence is concerned, is simply whether there is substantial evidence to support the finding upon which the order rests. This is what the statute applicable in this case prescribes. It is also the gist of the decisions on the point existing when the statute was enacted—and of those since rendered—in which a rule like that of this statute is really discussed. It is the rule of the cases from other jurisdictions cited in the majority opinion, and others cited or referred to in this, and of almost numberless others.

In the cases in this state in which it is held that an order of the Commission will be set aside upon this court's coming to the conclusion that it is against the weight of the evidence, as weighed by this court, it does not appear that these sections of the statute have had consideration. Those decisions are based upon the last sentence in section 111, Laws 1913, pp. 641, 642. The same sentence appears at the close of section 10522, R. S. 1919. That sentence is:

"The circuit courts of the state shall always be deemed open for the trial of suits brought to review the orders and decisions of the Commission, as provided in this chapter, and the same shall be tried * * * as suits in equity."

This last clause contains the language relied upon. In the first place, this sentence applies to circuit courts, and is not directly ap-

plicable to this court. Section 10525 refers to this court, and contains no language similar to that quoted from section 10522. In the second place, the language of this quoted sentence is general. That of sections 10534 and 10535 is particular. There are several things characteristic of a trial or hearing in equity other than the duty of the chancellor to decide according to the weight of the evidence. This general language ought not to be held to ex-
1129 punge the particular provisions of sections 10534 and 10535, in any event. In the third place, to construe this general language as an attempt to give to this court, on its view of the weight of the evidence, the power to substitute its findings of fact for those of the Commission, and therefore to overturn the findings of that body when they are supported by substantial evidence, is to construe it as an attempt to authorize this court to step outside its judicial functions and employ itself in administrative duties—a meaning which renders the provision violative of the Constitution. In the fourth place, it convicts the Legislature of the absurdity of providing a board of specialists in the matter of regulating public service corporations and then authorizing a tribunal, composed of men who are certainly not specialists in that field, to impose its view of the weight of the evidence in all matters upon those who are designed to be and doubtless are skilled in such matters of regulation.

The previous opinions of this court upon this question, in some of which the writer concurred, do not contain any evidence of a real examination of the issue. Those decisions are opposed to practically all decisions in the country on the point, are obviously incorrect, and should be overruled without further delay. If the majority opinion is to be understood as reaffirming them, which matter its language leaves rather in doubt, I do not agree to that reaffirmance. If that opinion is to be understood as adopting the rule of the cases cited from other jurisdictions in support of the rule it states, then its language should be changed to adopt that rule in plain terms, and expressly overrule our former decisions upon this question.

II. (2) With respect to the installation charge which is discussed, the question of its allowability is not involved in this case. If the holding of the majority opinion, that the rate fixed will pro-
1130 duce an adequate return, is sound, appellant will receive from that rate all to which it is entitled. If it does so, the details of its operating expenses need not be taken up one at a time to determine whether each is a valid basis of an allowable charge in proper circumstances. All such expenses, including those for installation, are covered by the rate fixed, on the hypothesis that the opinion is correct in holding that the rate will yield an adequate return. The subscribers who occasion less than the average installation expense are not here complaining, because the whole of that expense is included in the return from the general rates of which they pay a part. A complaint from them might present the question. The company is not injured by an inequitable distribution of the expense among the subscribers. It is concerned more with the question whether the total return from the whole body of subscribers

will give it the sum of which it is entitled. The opinion holds the total return is adequate.

III. Appellant apparently approaches the principal question on the theory that the question of fact in the case concerns the reasonableness of the rates in force before the order presented for review was made. The statute set out in a preceding paragraph requires this court to inquire whether the order was unreasonable or unlawful, and confronts appellant with a presumption that it is neither, but both reasonable and lawful. I concur in the result reached.

Higbee, J., concurs herein.

On Motion for Rehearing.

ELDER, *J.*:

On motion for rehearing appellant contends that under the opinions filed herein we have left the matter of service connection charges in such an unsettled state as to cause "confusion in the minds of the Commission and the telephone utilities of the state as to
1131 whether or not the service connection charges are held to be discriminatory, or otherwise, by this court." While I concurred in the result of the opinion filed by my learned associate, Chief Justice Walker, I expressed no opinion upon the question now urged. In order to clarify the subject somewhat, I add to my concurrence the view that such charges, when just and reasonable, are neither discriminatory nor unlawful. While upon first impression they might seem to impose an unfair burden upon the individual subscriber applying for the installation or removal of a telephone, nevertheless, if subjected to a thorough analysis, they will be found to be in furtherance of an equitable distribution of operative costs among all subscribers.

1132 Agreed that the above and foregoing is a full and complete abstract of all of the evidence in this case. Dated at Jefferson City, Missouri, this 21st day of October, 1921.

FREDERICK W. LEHMANN,
THOS. O. STOKES,
Attorneys for Plaintiff in Error.
R. P. SPENCER,
JAMES D. LINDSAY,
Attorneys for Defendants in Error.

1133 In the Supreme Court of the United States, October Term, 1921.

No. 496.

STATE at the Relation of SOUTHWESTERN BELL TELEPHONE COMPANY, a Corporation, Plaintiff in Error,

vs.

PUBLIC SERVICE COMMISSION OF MISSOURI and JOHN A. KURTZ, Edwin J. Bean, Hugh McIndoe, Noah W. Simpson, and Edward Flad, Composing the Public Service Commission of Missouri, Defendants in Error.

Præcipe.

To the Clerk of the Supreme Court of the United States:

It is agreed by and between the parties to the above entitled cause that you may print only the following papers, and that the same may be taken and considered as the entire record in this cause, to-wit:

1. Order of the Public Service Commission of Missouri of August 4th, 1919, initiating this cause.

2. Answer of the Southwestern Bell Telephone Company to said order of said Commission. (Opinions and orders of Commission contained in and printed as a part of the agreed abstract of the evidence.)

3. Amended motion for a rehearing before said Public Service Commission.

1134 4. Order overruling said amended motion for a rehearing.

5. Petition for review filed in the Circuit Court of Cole County, Missouri, by the Southwestern Bell Telephone Company.

6. Judgment of the Circuit Court of Cole County sustaining the orders of the Public Service Commission of Missouri.

7. Motion for a new trial filed in the Circuit Court of Cole County, Missouri.

8. Order of the Circuit Court of Cole County, Missouri, overruling motion for new trial.

9. Application and affidavit of Southwestern Bell Telephone Company for an appeal to the Supreme Court of Missouri, and allowance of the appeal.

10. Southwestern Bell Telephone Company's motion for rehearing in the Supreme Court of Missouri.

11. Record of all the proceedings in the Supreme Court of Missouri excepting the opinions of the Justices which are to be printed with the Agreed Abstract of the Evidence.

12. Petition for allowance of writ of error.

13. Assignments of error.

14. Writ of error.

15. Order of allowance of writ of error.

16. Bond.

17. Citation.

18. Return to writ of error.

1135 19. Præcipe for transcript.

20. Agreed abstract of the evidence.

Dated at Jefferson City, Missouri, October 31st, 1921.

FREDERICK W. LEHMANN,
THOS. O. STOKES,
Attorneys for Plaintiff in Error.
R. P. SPENCER &
JAMES D. LINDSAY,
Attorneys for Defendants in Error.

1136 [Endorsed:] No. 496. In the Supreme Court of the United States, October Term, 1921. State at the Relation of Southwestern Bell Telephone Company, a Corporation, Plaintiff in Error, vs. Public Service Commission of Missouri and John A. Kurtz, Edwin J. Bean, Hugh McIndoe, Noah W. Simpson and Edward Flad, Composing the Public Service Commission of Mo., Defendants in Error. Præcipe. Frederick W. Lehmann, Thos. O. Stokes, Attorneys for Plaintiff in Error; R. P. Spencer, James D. Lindsay, Attorneys for Defendant in Error.

[Endorsed:] File No. 28,451. Supreme Court U. S., October Term, 1921. Term No. 496. The State of Missouri ex rel. Southwestern Bell Telephone Co., Pl'ff in Error, vs. Public Service Commission of Missouri et al. Stipulation and Agreed Record. Filed November 3, 1921.

WM. R. STANSB
CLE

IN THE

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1922.

STATE OF MISSOURI ex rel. SOUTHWESTERN BELL TELEPHONE COMPANY,
Plaintiff in Error,
vs.
PUBLIC SERVICE COMMISSION OF MISSOURI and JOHN A. KURTZ, EDWIN J. BEAN, HUGH McINDOE et al.,
Defendants in Error.

No. 158.

In Error to the Supreme Court of the State of Missouri.

STATEMENT, BRIEF AND ARGUMENT FOR PLAINTIFF IN ERROR.

FREDERICK W. LEHMANN,
J. W. GLEED,
THOS. O. STOKES,
Attorneys for Plaintiff in Error.

CLAUDE NOWLIN,
E. W. CLAUSEN,
Of Counsel.

St. Louis Law Printing Co., 415 N. Eighth St. Main 1819, Central 919.

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IN THE

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1922.

STATE OF MISSOURI ex rel. SOUTHWESTERN BELL TELEPHONE COMPANY, Plaintiff in Error, vs. PUBLIC SERVICE COMMISSION OF MISSOURI and JOHN A. KURTZ, EDWIN J. BEAN, HUGH McINDOE et al., Defendants in Error.	No. 158.

In Error to the Supreme Court of the State of Missouri.

STATEMENT, BRIEF AND ARGUMENT FOR PLAINTIFF IN ERROR.

INTRODUCTION AND STATEMENT.

The Parties

are the Southwestern Bell Telephone Company, relator and plaintiff in error, hereafter called the Telephone Company, and the Public Service Commission of the State of Missouri, hereafter called the Commission.

The Telephone Company is a Missouri corporation which owns and operates telephone exchanges in nearly every large town and city in Missouri, and owns and operates local and long distance lines throughout the greater part of the state. The Kansas City and Independence exchanges, however, are not involved in this controversy.

The Controversy.

In July, 1918, the Government of the United States took over the management and control of all the telegraph and telephone companies of the country, and exercised such management and control from August 1st, 1918, to August 1st, 1919, and during that period the entire telephone system and business of the company was operated and conducted by the President, through Albert S. Burleson, the Postmaster General.

During this time of governmental control and management, the Postmaster General made some increases in rates for exchange, service, toll messages and connection charges which, however, the Telephone Company contends were insufficient to meet the increased cost of operation (Rec., pp. 1-8).

The government relinquished its control and management at midnight of July 31st, 1919, and on August 4th, 1919, the Commission ordered the Company to show cause "why it should be permitted to continue to charge the rates and charges for telephone service

now rendered by it within this state, and put into effect by order of the Postmaster General and conditionally extended by the Act of Congress for four months from August 1st, 1919, including service connection charges" (Rec., pp. 1-3).

Responsive to this order the Company made a return alleging that its entire capitalization, stock and debt, was free from inflation, and alleging what dividends it had paid upon its stock from the beginning; that because of the war, and from 1916, there were continuous increases in operating expenses, with no prospect of decrease for ten years, and that under the rates prescribed by the Postmaster General, the Company would not earn to exceed three and a half per cent upon the fair present value of its property, used and useful, and would not earn 5 per cent upon the original cost of its physical plant (Rec., pp. 6-8).

There were hearings in September, October and November, 1919 (Rec., p. 111), and on November 26th, 1919, the Commission made its report and handed down its decisions and orders.

It approved and continued in force the increased toll rates prescribed by the Postmaster General (Rec., pp. 657-658). From this order there was no appeal by anyone.

It reduced the rates prescribed by the Postmaster General for exchange service at forty-three of the ex-

changes to an amount in the aggregate of $91,194 annually (Rec., pp. 22-38).

It abrogated altogether as being improper in any amount the charges for service connections, moves and changes established by the Postmaster General (Rec., pp. 39-42). This further reduced the revenues of the Company by $118,000 annually, making a total annual reduction of $209,194.

Financial History of the Company.

The company introduced evidence showing the facts of its financial history (Rec., pp. 148-184).

The company was originally the Missouri and Kansas Telephone Company. It changed its name to the Southwestern Bell Telephone Company in 1917, and at that time acquired the property of the Southwestern Telegraph and Telephone Company (Rec., p. 148).

The Missouri and Kansas Company was organized in 1882 with a capital stock of $550,000, which was increased from time to time until it reached $13,627,700, all sold for cash and at par except $382,369, less than 3 per cent, issued to pay for construction. On two issues of the stock there was a slight discount aggregating $395.25 (Rec., p. 149).

It paid dividends from 1882 to the time of consolidation with the other company averaging 1.43 per cent annually. From 1907 to 1916 it paid no dividend (Rec., p. 156).

The Southwestern Telegraph and Telephone Company was organized in 1879 with a capital stock of $400,000, which was increased from time to time until it reached $10,000,000. Of this all but 4 per cent was paid in cash, with a premium of more than $12,000. Four per cent, or $400,000, was issued for plant and construction (Rec., p. 150).

The average of dividends paid on this stock during the entire life of the Company was 5.9 per cent annually. From 1910 to the time of consolidation in January, 1917, it paid in dividends for 1910, 6 per cent; 1911 and 1912, 4 per cent; for 1913, 1914 and 1915, 3 per cent, and for 1916, 4 per cent (Rec., pp. 156 and 157).

By the consolidation the present Company, the Southwestern Bell Telephone Company acquired all the assets of the Southwestern Telegraph and Telephone Company, paying therefor with $10,000,000 of its stock, the stock of the consolidated company being just equal to the combined stock of the two original companies (Rec., p. 158).

The present, the consolidated company, paid dividends of 5 per cent in 1917 and 1918, and was able to do this because of properties acquired by it in other states (Rec., p. 159).

No question is made of the absolute integrity of the capital account of the Company.

Cost of the Property.

The books of the Company introduced in evidence showed cost of "total plant, supplies, equipment and working capital, $22,999,943" (Rec., pp. 182 and 183). "This is an actual and not an estimate figure" (Rec., p. 180).

Evidence as to Value.

The Company, by its engineers, introduced evidence of the reproduction cost new of all the property involved. This is summarized in Exhibit 43, opposite page 230 of the record, as follows:

Total physical telephone property	$28,454,488.00
Working capital	1,051,564.00
Cost of establishing business	5,594,816.00
	$35,100,868.00

And of the value, present condition (June 30th, 1919), and shown by the same exhibit, as follows:

Present condition	$24,709,295.00
Working capital	1,051,564.00
Cost of establishing business	5,594,816.00
	$31,355,675.00

As to the manner in which the appraisals of the property were made, it is stipulated, page 305 et seq. of the record, as follows:

> "(g) While it was impossible in the short time allowed by the Commission to make a complete and detailed inventory and appraisal of all of the Southwestern Company's properties in the State of Missouri, recent complete and detailed inventories and appraisals had been made for 96.17 per cent of the total property, and were adjusted and used in the complete appraisal presented at the hearing. The remaining 3.83 per cent of the total property was valued in the following manner: (1) For 2.15 per cent of the total property accurate office records were used, and (2) for the remaining 1.68 per cent of the total property the cost-per-station method was used."

The Company's witnesses testified that "all of its property included in the figures presented by it was used or useful in giving telephone service to the public in Missouri" (Rec., p. 268).

Valuation data as to the entire property and as to the property at each exchange, showing "reproduction cost new, and reproduction cost new less depreciation," as testified to by the Company's engineers, and the Commission's valuation plus net additions, where such valuation was made, are contained in the record, pages 184 to 228. The appraisals by the Com-

pany engineers are brought together in Exhibit 43, opposite page 230.

The prorated book cost, shown in the details as to each exchange (pages 184 to 228), was obtained by assigning to each exchange the percentage of the book cost of all the properties, which its reproduction cost new bore to the reproduction cost new of all the properties. This was done because the cost account was not kept separately as to each exchange (Rec., p. 239).

The date of the appraisals of the different exchanges made by the Company's engineers, and how they were made is shown by Exhibit 83 (Rec., pp. 306-308).

As to the prices used in making this valuation the testimony was (Rec., p. 265):

> "The prices used in estimating the reproduction cost new less depreciation of the Southwestern Company's property in the State of Missouri, were not strictly the prices prevailing as of June 30, 1919, the date of the inventory and appraisal.
>
> * * * * * * *
>
> "The prices used are about 25 per cent higher than pre-war prices, but the prices in effect today are 45 to 50 per cent higher than pre-war prices.
>
> "Wages today of employes in the plant department are 50 per cent higher than they were in 1915. The average wage for employes in the

plant department in 1915 was $63.00 per month; it is now $97.00. The exact percentage of increase was 49.75 per cent. The greater portion of that increase was made during the latter part of 1918 and in 1919."

Against this testimony as to the value of the property introduced by the Company there was offered only the report and decision of the Commission and some of the testimony in what are known as the old Caruthersville, St. Louis and Springfield cases.

The reports in these casses are contained in the record and are found in the St. Louis case, pp. 569 to 604; the Springfield case, pp. 604 to 614, and the Caruthersville case, pp. 614 to 628.

The Commission in those cases found the values of the property involved and at the time of the hearing of them to be as follows:

St. Louis, December, 1913 (Rec., p. 592)	$8,500,000
Springfield, September, 1916 (Rec., pp. 609-612)	815,000
Caruthersville, February, 1914 (Rec., pp. 622-3)	25,000
	$9,340,000

The Commission says in its report (Rec., p. 24):

"The engineers of this Commission have made a detailed inventory and appraisal and this Com-

mission has formally valued the Company's property at only three of its exchanges, viz: at the City of Caruthersville, reported in re Southwestern Tel. & Tel. Company, 2 Mo. P. S. C. 492; at the City of St. Louis in cases No. 234 and No. 235 as yet unreported; and at the City of Springfield reported in re Missouri and Kansas Telephone Company, 6 Mo. P. S. C. 279, and as a result we have only the estimates and appraisals of the Company before us in relation to the value of the property at the other exchanges. We think it is clear, however, from the data at hand that the values placed by the Company upon the property are excessive, and not a just basis for rate making."

After these dates and prior to June 30th, 1919, there were additions to these properties, the net cost of which the Commission added to its original valuations making a valuation for June 30th, 1919, as follows:

St. Louis, Commission's original valuation	$ 8,500,000
Net addition (Rec., p. 218)	1,623,765
Springfield Commission's original valuation	815,000
Net additions (Rec., p. 224)	34,141
Caruthersville Commission's original valuation	25,000
Net additions (Rec., p. 193)	5,992
Total	$11,003,898

There was no evidence whatever, except that introduced by this Company, as to the cost or value of the remainder of the property, which was 46 per cent of the whole.

To arrive at the value of all the properties, the Commission applied two arithmetical formulas, which produced practically the same result, and which were in fact one and the same, resting upon the assumption, viz: that in so far as the Company's valuation of the three specific properties exceeded that fixed by the Commission six years prior it was an over-valuation and that the remaining 46 per cent had been over-valued in the same measure. And so they got the value of this large remnant as follows:

> "The values fixed by this Commission at Caruthersville, St. Louis and Springfield in the cases above mentioned, aggregate $11,003,898, while the Company estimates the aggregate cost of reproduction new of these plants in this case at $18,971,011. The ratio of the latter figure is 172.4 per cent. This percentage divided into $35,100,471, the Company's estimate of the aggregate of the reproduction new of its property in Missouri in this case, equals $20,350,000 which might be said to be one measure of the value of the property" (Rec., p. 24).

This method ignores present value entirely, as for its base it takes the value of the three properties

mentioned at the time of their valuation by the Commission, St. Louis, December 31st, 1913, Caruthersville, September 30th, 1913, Springfield, September 30th, 1916, and adds to these only the cost of additions thereafter made.

The second formula, or rather the second application of the same formula, was as follows:

> "Again, the Company's estimate of the aggregate cost of reproduction new, less depreciation, of its properties at Caruthersville, St. Louis and Springfield in this case is $16,913,673. The ratio of this figure to the aggregate value fixed by the Commission at these exchanges, plus additions reported by the Company is 153.7 per cent. This percentage divided into $31,355,278, the Company's estimate of the aggregate cost of reproduction new, less depreciation, of its property in Missouri in this case, equals $20,400,000 which may be said to be another measure of the value of the property" (Rec., p. 24).

The two sums thus found by the Commission are not the same for the reason that the percentage of depreciation shown by the Company as to the three properties, and as to the entire properties, are not the same. Had it been so, the result of the two formulas would have been identical. In the second case, as in the first, present value is entirely ignored.

The Commission's Finding of Book Cost.

The cost of the property as shown by the books of the Company was $22,888,943 (Rec., p. 25). This is an actual and not an estimated figure (Rec., p. 180). The Commission however subjected this amount to certain deductions. In the old St. Louis case they held $454,689.16 of the property to be non-used or non-useful and they subtract this and enough more to make up $500,000 on the conjecture that somewhere else there may be non-used or non-useful property to that amount; they subtract further, $17,513.52 as excess working capital, and finally, $3,774,501.00 shown by the books as depreciation reserve, which they characterize as "the amount to be deducted, account extinguished value **recouped from patrons** by charges to depreciation." They add then 10 per cent or $1,859,695 for intangibles, and thus find a "total adjusted book cost" of $20,456,621.33 (Rec., pp. 25 and 26).

Even this "adjusted book cost" is arbitrarily reduced by $56,621.33, and again present value is entirely ignored.

The Stock and Capital Account

of the Company is to be considered in connection with the reason givin for deducting accrued depreciа-

tion reserve from book cost, namely, that it had been recouped from patrons.

The financial history of the Company and its constituents is disclosed fully and in detail (pp. 148-163). Its stock except a small percentage was paid up in cash at par. A slight discount allowed in one case, was much exceeded by premiums received in others. So far as property was taken for stock, and this was not to exceed 3 per cent, there is no suggestion that the property was over-valued.

The dividends paid by the consolidated company, and by the two original companies, during their later years were substantially less than a fair return upon the property, and the depreciation reserve was set up during these lean years. It was not recouped from patrons, but was plainly at the expense of the shareholders. In fact, to get a reserve, the American Telephone and Telegraph Company gave to the Missouri and Kansas Company more than a million of dollars in the form of surrendered notes, its reserve being in the red (Rec., p. 162).

Revenue Under Government Rates.

As to this there is no dispute. It was precisely ascertained for the months of May, June, July and August, 1919, and estimated for the following eight months. It amounts to $7,077,306.

The Expenses.

The following table shows the items of agreement and disagreement between the parties, the balance of net income under the government rates as determined by each, and the percentage of return upon the value of the property as determined by each (Rec., p. 314).

"Annual Expenses.

	Company Basis	Commission Basis	Commission Under
Expenses, exclusive of charge for depreciation reserve	$4,056,285	$4,056,285	.....
4½% payment	316,452	142,404	$174,048
Charge for depreciation reserve	1,707,269	1,224,000	483,269
Increased expenses on acct. of increases in wages effective July and August	183,000	.....	183,000
Strike expense	50,000	50,000	.....
Total expense	$6,313,006	$5,472,689	$840,317
Balance net income	764,300	1,604,617	840,317
	2.4%	7.9%	....."

The marked difference as to charge for depreciation reserve is the result of the difference in the valuations of the properties, the parties agreeing that six per cent was the proper amount to be allowed.

As to the 4½ per cent payment which is under a contract with the American Telephone and Telegraph Company, there is no question that the company paid the full amount of $316,452, but the Commission allowed only $142,404 as having been properly paid.

The item of $183,000 for increased wages is due to an error in accounting by the Commission. The year taken for determining revenues and expenses was that beginning May, 1919, and the first four months of that year were taken as typical of the entire year. Increases were made, effective in July and August, which did not enter into the expense account of May and June, and to that extent the first four months did not fully reflect the labor costs of the company for the year.

The reduced expenses thus found by the Commission increased correspondingly its showing of net return and this applied to its low valuation explains the percentage of net return found by it.

Fair Return.

The only direct testimony as to what would be a fair return upon the property was that of Frank P. Hays, an investment banker of St. Louis, experienced in the financing of telephone enterprises in Missouri. His testimony was that a fair return would not be less than 10 per cent per annum (Rec., p. 568).

Reductions Made by the Commission.

The Commission made reductions of rates at forty-three of the exchanges (Rec., pp. 28 to 37) involving a total reduction of $91,194.30 per annum. No reduction was made at Caruthersville. Reductions were made at St. Louis and Springfield. As to the other forty-one exchanges at which reductions were made, there was no testimony as to the value of the property involved save that introduced by the Company, which is summarized in Exhibit 43, opposite page 230 of the record.

The Commission also disallowed the installation or service connection charges as being unreasonable and constituting an unlawful discrimination against new subscribers (Rec., p. 40). The charges for moves and changes were disallowed because they had not been authorized by the Commission (Rec., p. 4). The reduction of income on these accounts amounted to $118,000 (Rec., p. 28).

The result of the Commission's action was to make a total annual reduction of $209,194.30 in the revenues of the Company, so that on its face, after the 6 per cent charge for depreciation was provided for, there remained $1,395,422.17 for return, surplus and contingencies, amounting to 6.81 per cent per annum on the Commission's tentative value of $20,400,000.00 (Rec., p. 28). Making allowance for these reductions,

the net income of the Company available for return, surplus and contingencies would be $517,705.70, or 1.65 per cent of the Company's valuation.

The Commission groups depreciation with return, surplus and contingencies. This is confusing. Depreciation is an expense and is not in the nature of a return upon the property. It should be dealt with only under the head of expense.

The Procedure.

When the Commission made its report the Company moved for a rehearing, which was denied (Rec., pp. 9-13). The case was then taken by writ of review to the Circuit Court of Cole County (Rec., p. 14), and upon the issues presented by the Company's petition for the writ, and upon the record as made before the Commission, the cause was tried by the Court and the orders and decisions of the Commission were affirmed (Rec., p. 53). Motion for new trial was made and overruled (Rec., pp. 53-57). The case was then appealed to the Supreme Court of the state, where the judgment of the Circuit Court was in all things affirmed (Rec., p. 58). A motion for reargument was made and overruled (Rec., p. 89). The case was then brought before this Court by writ of error (Rec., pp. 90-110).

Constitutional Questions.

In the motion for rehearing before the Commission (Rec., p. 9, et seq.) objection was made in detail to its findings, orders and judgment as to the valuation of the property, the allowance for depreciation in the expense account, disallowance of other proper items of expense, including increase in pay rolls and payments to the American Telephone and Telegraph Company, disregarding the cost of establishing business, the reductions of rates made, and the elimination of installation and moving charges as being confiscatory, unreasonable and unjust, prohibiting the Company from operating and maintaining its property in the state without actual loss, preventing it from maintaining an adequate reserve for depreciation and from earning a reasonable return upon the fair value of its property used and useful in rendering its service, and that these orders and decisions were therefore unconstitutional, void and unenforceable, and contrary to and in violation of the Constitution of the United States and particularly the Fourteenth Amendment thereto, prohibiting the taking of property without due process of law and guaranteeing to all persons the equal protection of the law, and contrary to and in violation of the Constitution of the State of Missouri and particularly Article II, sections 20 and 21, providing that no private property

shall be taken or damaged for public or private use without just compensation.

These objections were made specifically to the Commission's valuation of the property and to the principle upon which that valuation was made, and to the Commission's allowance for depreciation and its determination of the expenses, its exclusion of the major part of the payment made under the license contract and its failure to take into account the increased wages initiated in July and August, 1919, and its disallowance of installation and moving charges (Rec., pp. 9-13).

These objections were elaborately repeated in the Circuit Court of Cole County, in the petition for review (Rec., pp. 43-51) and in the motion for new trial (Rec., pp. 53-57).

Upon the record so made up, presenting these various questions the case was heard and determined by the Supreme Court of the state, which affirmed the decision of the Circuit Court of Cole County, affirming the action of the Commission. A motion for rehearing was denied (Rec., p. 89).

On the petition for writ of error from this Court, there were elaborate assignments of error, all setting forth the constitutional grounds mentioned above (Rec., pp. 97-102).

The Specific Errors Relied Upon.

We present and rely upon the following specifications of error, each resulting in depriving the appellant of its property without due process of law and denying to it the equal protection of the law in contravention of the Fourteenth Amendment to the Constitution of the United States.

1. The orders and decisions of the respondents and the judgments of the state courts sustaining the same, fixing the value of the Company's property for rate-making purposes are erroneous in that they ignore the value thereof at the time of the inquiry and are based upon the value of the property at the time it was constructed or acquired.

2. The respondents and the state courts erred in that they refused to consider present value at all and assumed original cost to be the sole basis of value in making a valuation of the property for rate-making purposes.

3. The respondents and the state courts erred in finding that the value of the appellant's property for rate-making purposes, used and useful in the telephone service was only $20,400,000.00, when the undisputed evidence was that it was worth $31,355,-378.00.

4. The respondents and the state courts erred in not allowing to appellant in the valuation they made and approved of its property the going value of appellant's business shown by the undisputed testimony to be $5,594,816.00 and allowing instead only the sum of $1,859,692.25 on account of intangibles.

5. The respondents and the state courts erred in not allowing as expenses of the business heavy increases in wages effective in July and August, 1919.

6. The respondents and the state courts erred in not allowing to appellant an adequate amount for reserve for depreciation of the property.

7. The respondents and the state courts erred in not allowing it credit for the full sum paid by it to the American Telephone and Telegraph Company under the four and one-half per cent or license contract.

8. The state courts erred in holding that the compensation paid by the American Telephone and Telegraph Company to the appellant in handling toll messages was material when its action in that behalf was approved by the Commission and was not in issue in the case.

9. The respondents and the state courts erred in holding that 6.81 per cent was a fair return to be earned by appellant upon its property.

10. The respondents and the state courts erred in refusing to allow appellants a fair return upon the fair value of its property, and in refusing to fix a fair valuation upon that property.

11. The respondents and the state courts erred in holding that the rates prescribed by the Postmaster General were not legal rates and that respondents had the right to change such rates without proof that they were unlawful.

12. The respondents and the state courts erred in holding that the net earnings of appellant's property under the Postmaster General's rates amounted to 7.9 per cent of the value thereof.

13. Respondents and the state courts erred in reducing the schedule of exchange rates in the face of the undisputed evidence that such reduced rates are unreasonable, unjust, unfair, discriminatory and confiscatory, and insufficient to enable appellant to earn a fair return on the fair value of its property.

14. The respondents and the state courts erred in disallowing the charges for installation of instruments and for moving service.

We will discuss these specifications under the general propositions following, supported by the authorities cited.

PROPOSITIONS AND AUTHORITIES.

I.

The value of the property found by the Commission was not its present value, but was its actual cost, or its value in 1913, plus net additions since, its present value being ignored, the value found being far below the present value of the property, with the result that the rates prescribed were confiscatory in their effect and operation.

Section 10511, R. S. Mo. 1919;
Section 10502, R. S. Mo. 1919;
Wilcox v. Consolidated Gas Co., 212 U. S. 19;
Minnesota Rate Cases, 230 U. S. 352;
Lincoln Gas Co. v. Lincoln, 250 U. S. 256;
Elizabethtown Gas Co. v. Board etc., 111 Atl. (N. J.) 729;
City Light & Traction Co. of Sedalia, 8 Mo. P. S. C. 204;
Hurst v. C. B. & Q. Ry. Co., 280 Mo. 566.

II.

Valuation, though described as tentative, must be as of the date of determination, and rates prescribed,

though designated as temporary, must be just and reasonable.

Section 10502, R. S. Mo. 1919;
Section 10511, R. S. Mo. 1919;
State ex rel. v. Atkinson, 271 Mo. 28;
Galveston Electric Co. v. Galveston Adv. Op., 1922-382;
New York Telephone Co. v. Prendergast, U. S. D. C. New York, decided May 26, 1922;
Potomac Electric Co. v. Dist. of Columbia, 276 Fed. 327.

III.

The findings of the Commission as to the value of the property were made under a mistake of law, are entirely without support in the evidence, and are against the evidence of indisputable character in the case. The rates prescribed by the Commission are therefore without legal effect and void.

Section 10,502, R. S. Mo. 1919;
Paragraph 2 of section 10,511, R. S. Mo. 1919;
State etc. v. Toledo etc. Ry. Co., 286 Ill. 582;
State etc. v. Springfield etc., 291 Ill. 209;
State v. Great Northern Ry. Co., 135 Minn. 19;
I. C. C. v. Union Pacific, 222 U. S. 541;
I. C. C. v. Louisville & Nashville Co., 227 U. S. 88.

IV.

The Commission's calculation of expenses was far below what was actually and necessarily incurred in the operation of the property and resulted in a showing of net earnings far beyond what was realized, and the reduced rates being predicated on such showing there was a taking and appropriation of the Company's property without due process of law and a denial of the equal protection of the law.

A. The annual charge for depreciation is estimated by the Commission upon an undervaluation of the property and is entirely inadequate.

B. Increase in wages made in July and August, 1919, were not taken into full account by the Commission.

C. The four and one-half per cent payment under the license contract with the American Telephone and Telegraph Company is a legitimate item of expense.

Houston v. S. W. Bell Co., Adv. Op., 537;
Chesapeake etc. Co. v. Manning, 186 U. S. 239;
I. C. C. v. Chicago etc. Ry. Co., 209 U. S. 108;
Chicago etc. Ry. Co. v. Wisconsin, 238 U. S. 491;
People ex rel. v. Stevens, 197 N. Y. 1;
Bacon v. Boston etc. R. R. Co., 83 Vermont 421;
Atlantic etc. Ry. Co. v. North Carolina, 206 U. S. 1;
Public Utilities etc. v. Springfield, 291 Ill. 209.

V.

Charges for installation, moving, etc., were wrongfully disallowed.

Section 10,128, R. S. Mo. 1919;
I. C. C. v. Chicago etc. R. Co., 209 U. S. 108;
Smyth v. Ames, 169 U. S. 466;
I. C. C. v. Stickney, 215 U. S. 98.

VI.

No question as to division of rates on long distance messages is involved in this suit.

Houston v. S. W. Bell Co., Adv. Op., 538-9.

VII.

The Commission's allowance of 6.81 per cent per annum for return, surplus and contingencies on the tentative value of $20,400,000 did not permit a fair return on the property used in the service.

ARGUMENT.

I.

The sum at which the property was appraised by the Commission was far below its actual present value, was based on actual cost, ignoring present value, and was confiscatory in effect.

The principles upon which the value of property devoted to public use is to be determined have been settled by this Court and a discussion of them is quite unnecessary.

The statute of Missouri under which the Commission acted, Section 10,511, R. S. Mo. 1919, provides:

> "The Commission shall have power to ascertain the **value** of the property of every telegraph corporation and telephone corporation in this state and every fact which in its judgment may or does have any bearing on such value."

So the Commission undoubtedly may ascertain the cost of such property, but its final determination must be of its value.

And section 10,502 provides that the Commission in prescribing rates shall do this "with due regard, among other things, to a reasonable average return

upon the **value** of the property actually used in the public service."

It is settled now that the value to be ascertained in rate-making proceedings is the value at the time of the inquiry.

This Court said in **Wilcox v. Consolidated Gas Co.**, 212 U. S. 19, l. c. 41:

> "There must be a fair return upon the reasonable value of the property at the time it is being used for the public."

And further, in the same case (l. c. 52):

> "We concur with the Court below in holding that the value of the property is to be determined as of the time when the inqury is made regarding the rates. If the property which legally enters into the consideration of the question of rates has increased in value since it was acquired, the company is entitled to the benefit of such increase."

In the **Minnesota Rate Case**, 230 U. S. 352, this Court said (l. c. 458):

> "It must be remembered that we are concerned with the charge of confiscation of property by a denial of fair return for its use; and to determine the truth of the charge, there is sought to be ascertained **the present value** of the property."

Many other citations of cases decided to the same effect by this Court might be made, but no good purpose would be served thereby.

The date of inquiry was taken to be June 30th, 1919. The question to be determined was the value of the property at that time.

The Commission reports that "the Company offered in evidence exhibits showing the value of its property in the entire state * * * and also at forty-six of its local exchanges in the state. It shows by such exhibits that the value of the property in the entire state is as follows: Reproduction cost new, $35,100,471, and cost as per books, $22,888,943" (Rec., pp. 23-24). The figures as to each plant, showing also working capital and cost of establishing business at the various plants, are found in Exhibit 43 (Rec., p. 230).

The record shows how this made made up. "Recent complete and detailed inventories and appraisals had been made for 96.17 per cent of the total property and were adjusted and used in the complete appraisal presented at the hearing. * * * For 2.15 per cent of the total property accurate office records were used, and for the remaining 1.68 per cent of the total property the cost-per-station method was used" (Rec., p. 305).

Exhibit 87 shows when the appraisals were made (Rec., p. 306). The first five were made in 1919, ex-

cept the toll plant, which was made November 15th, 1918, and these aggregate $9,130,979. To these no net additions were made. The next twenty-seven exchanges were appraised in 1918 and 1919, except two in 1917, and they aggregate, with net additions, $2,605,787. The next group of six were appraised in 1913, 1916 and 1917, and aggregate $15,675,778. This group includes Caruthersville, Springfield and St. Louis. These were appraised "with net additions to December 31st, 1916, to which has been added 25 per cent plus net additions since" (Rec., p. 307). The appraisals made from accurate office records aggregate $586,746, and those on the per-station basis, $459,198.

The evidence, introduced by the Company as to the increase of prices because of the war was in line with common knowledge of the subject. The facts in a general way are so notorious that this Court in cases of this kind has taken judicial notice of them. In **Lincoln Gas etc. Co. v. City of Lincoln**, 250 U. S. 256, l. c. 268, this Court said:

> "It is a matter of common knowledge, that, owing principally to the World-War, the costs of labor and supplies of every kind have greatly advanced since the ordinance was adopted and largely since this cause was heard in the court below. And it is equally well known that annual returns upon capital and enterprise the world

over have materially increased, so that what would have been a proper rate of return for capital invested in gas plants and similar public utilities a few years ago, furnishes no safe criterion for the present or for the future."

Applying this doctrine in the case of **Elizabethtown Gas Light Co. v. Board of Public Utility Commissioners**, 111 Atl. (N. J.) 729, Swayze, J., said:

"I think it entirely clear that the failure to allow for prices at the time to which the rates apply, July 1st, 1919 (the very time here involved), was an error. It is not denied that prices were very much higher now than the average for the year 1912 to 1916.

* * * * * * *

"To what extent the increase in prices may be due to an inflation of the currency or to any particular cause we do not know. What we do know is that the dollar of 1919 and the dollar of 1920 are worth less compared with the dollar of the average year from 1911 to 1916.

"If it were proposed to value the property of the gas company in 100-cent dollars and allow them a return only on that, while other values were on the basis of 50-cent dollars and just double in number, everyone would see the injustice. So far as the increase in price is due to inflation of the currency, the illustration is a perfect one."

The very injustice so clearly prointed out was done in this case. The values ascertained in 1913 for the St. Louis plant of $8,500,000 of the Caruthersville plant $25,000 and of the Springfield plant in 1916, $815,000; a total of $9,340,000, with additions thereto at net cost, were taken as the measure of the value of all the properties of the Company as of June 30th, 1919.

But values of all other properties and particularly of labor and materials were greatly enhanced with the consequence that the values allowed for the Company's property were relatively and correspondingly diminished. The number of dollars which produced the plants in and prior to 1913 would not reproduce them in 1919, and the measure of value adopted and applied by the Commission was, therefore, unjust and confiscatory.

The Company, however, did not rest its case upon common knowledge. Direct evidence of the facts was introduced.

The prices used by the engineers in making their appraisals of the property as of June, 1919, were not the current prices which were from 45 to 50 per cent above pre-war. They used prices only 25 per cent above. But labor costs based on actual figures were at least fifty per cent more than in 1913. They paid 50 per cent more for material than in 1914. Team hire, board for men, expenses of every kind were up.

Cable which had served its purpose could be sold for more as junk than it cost new in 1913. To be conservative, however, they added in their appraisals not fifty, but only 25 per cent on this account (Rec., pp. 265-267).

Prices in 1913 and 1914 were very low and in 1915 did not go up until very late in the year (Rec., p. 267). The rise was continuous. The total of salaries and wages charged to operating expenses, on the annual basis, was as follows (Rec., p. 315):

January, 1917	$2,236,548
June, 1917	2,363,312
January, 1918	2,585,724
June, 1918	2,604,612
January, 1919	2,821,092
June, 1919	3,227,016

Here was an increase in two years and a half of 44 per cent. What was true of labor cost in operation was equally true of labor cost in construction. Increase in the rate of wages was general in every industry. Nor was the high mark reached in June, 1919. There was an increase of pay to employes in July amounting on an annual basis to $64,000, and in August amounting to $203,000 (Rec., pp. 316-317).

The appraisals and inventories made by the Company's engineers were on file with the Commission, as shown on page 308, and the testimony of the engi-

neers respecting them was heard by the Commission. They were credible men (Rec., p. 112) and competent in their calling. Their testimony was not contradicted nor was it qualified in any way.

True, the Commission says (Rec., p. 24), "We think it is clear from the data at hand that the values placed by the Company upon the property are excessive and not a just basis for rate making."

What are the data at hand? The Commission in the valuation of the property may resort to any "source of information available, which information shall be offered in evidence on such hearing" (par. 2, sec. 10511, R. S. Mo. 1919). The data at hand must be something offered in evidence on the hearing and contained in the record.

They are simply and only the records of the old Caruthersville, St. Louis and Springfield cases, and are found at pages 569-628 of the record in this case. Everything in those cases had reference to the time they were being heard, that is, 1913 for the St. Louis and Caruthersville cases, and September, 1916, for the Springfield cases. The Commission fixed the valuation of those properties at that time to be $9,340,000 and it fixed that amount plus net additions since as the value of those properties at the present time. It took no account of and allowed nothing for the increase of values in the interim. The Company's wit-

nesses did. That accounts for the difference in the valuations now.

The case is not one of difference of opinion as to what was the increase of value after 1913, or how much should be allowed therefor. The difference was one of principle, and was radical.

The Commission does not admit the principle of present value, and criticize or dissent from the Company's estimates and appraisals of value in June, 1919, as being excessive on that basis. It simply presents its valuation of the Caruthersville, St. Louis and Springfield properties made in 1913, plus net additions, as the value of those properties in 1919, and by as much as the Company's appraisals and estimates exceed this it holds them to be excessive. It assumes further that in the same percentage the Company's appraisals and estimates of the remaining 46 per cent of the property are excessive. This must be upon the assumption that the same vice, or what the Commission holds to be a vice, underlies all the Company's appraisals and estimates, and that is adoption of present value as the basic measure. Nothing else is suggested as impairing the Company's appraisals. If present value is not to be taken as the basis of measurement, the Commission was logical in its dealing with the Company's evidence showing that value. The Company's appraisals in the view of the Commission were excessive because they took into ac-

count increase of value from 1913 to 1919. The Commission took no account of such increase, no evidence, save by the Company, was offered respecting it, no estimate of its extent was made by the Commission. It was rejected as an irrelevant consideration.

It matters not whether we consider the Commission's finding as based upon the cost as shown by the books or upon its arithmetical formulas. The result is the same and for the reason that in either case the Commission ignores the increase in value after 1913.

If the cost as shown by the books is taken, the "total adjusted orginial cost" found by the Commission, then we have baldly original cost, which by its very terms excludes increase in value since the property was acquired.

If the arithmetical formula is taken as the test, then we have what the Commission determined to be the value in 1913 as the measure of value in 1919, which by its terms excludes any increase since 1913.

The only possible question under the Commission's report is, whether it went back to the original acquisition of the property to find the basic value or went back to 1913. In either event everything in the way of increase of value thereafter was ignored. The uncontradicated testimony of the Company's engineers was not disparaged as unworthy of credit, but like the common knowledge of the subject was left out of view as immaterial. The difference in the valuations

made by the Company's engineers and by the Commission was fundamental and irreconcilable. The one was based on and limited to original cost, or value in 1913, the other took account of present value.

That present value was thus ignored is inherent in the Commission's action, although the principle was not declared in terms in the report in the present case. Nor was it necessary to declare it here, inasmuch as the declaration had been made a short time before. This case was decided by the Commission November 26th, 1919. In September, 1919, it had decided in the case of **City Light and Traction Company of Sedalia**, 8 Mo. P. S. C. 204, and there it announced in terms the principle of its action, viz:

> **"The Commission is without inclination to accept present day unit prices for applicant's property, believing the preferred enhanced value to be an unearned increment, upon which the consumers should not be required to pay an investment return."**

It applied this rule rigorously in the present instance, excluding every element of increase of value of whatever nature and to whatever it might be due and thus, and thus only, reached or could reach the conclusion that the value of the property in June, 1919, was but $20,400,000.

The Supreme Court of Missouri approved this action of the Commission and the principle on which it

was based, as will appear from the opinion rendered in the case. The Court said (Rec., p. 672):

> "We are unable to discern how any well balanced mind can adjust itself to the theory that the proper valuation to be placed on a utility plant for rate-making purposes may be obtained by making an inventory of its component parts already in place, and estimating their aggregate cost by giving to each part the value that it has on the market as a detached article ready for use anywhere. Included in such a scheme is the proposition that the public must pay a return upon, **not the actual sums spent for labor at the time the plant was assemb'ed. but upon such sums for labor as would be required to assemble the plant today.**"

The opinion then quotes approvingly Professor Gray of Minnesota to the effect that while **in law** public utilities remain private properties "this has not the slightest economic significance, since the law has essentially taken from this property the chief attribute of private property—the chance of speculative gains." This means any gain resulting from an increase in values, however general that may be.

Continuing (Rec., p. 673), the Court says:

> "Of like persuasive force is the fact that not only the respondent, but other state commissions, have adopted the reproduction cost new, less depreciation, plus the value of the plant as a going

concern, as bases in reaching a valuation for rate-making purposes, but **in so doing they have uniformly used normal prewar prices in estimating the cost of labor and material.** Money actually spent and materials purchased at wartime prices were so allowed, as was done in this case; but such a valuation as is insisted upon by appellant, based upon wartime or abnormal prices, has been considered as grossly unjust, and has not been followed. The curious will find the cases in this behalf cited in the respondent's brief."

Our insistence is not upon peak prices, the abnormalities of the war, but only that the present universal enhancement of all prices shall be taken into fair account in determining what are reasonable present rates. The Commission disregarded altogether the changed conditions of business and industry which were the consequence of the war and which did not end with the war, but were practically in full force and effect at the time of this valuation. And even now, four years after the armistice, there has not been a recession to prewar prices. Enhanced prices continued through so long a period cease to be abnormal and become the usual prices of the time with which everyone must reckon, for none can escape them. The normal standard has been raised and is higher than it was before the war. Now, to use "normal prewar prices in estimating the cost of labor and material" is to use prices which exist only in memory.

To subject any utility to a normal prewar valuation of its property throughout the years that have passed since the breaking out of the war and to a normal prewar return upon that valuation is to bankrupt it. If state commissions uniformly do this they are not in accord with the judgments of this Court, nor with the taxing authorities of their states, who have uniformly increased the valuation of public utilities because of the general enhancement of prices.

And, so far as concerns the responsibilities and liabilities of a public utility, the Supreme Court of Missouri holds it to account upon the basis of the present day's enhancement of prices and of the dollar's diminished purchasing power.

In the case of **Hurst v. Chicago etc. Ry. Co.**, 280 Mo. 566, decided March 13, 1920, the Court said "that money today has much less purchasing power than it had twenty or even ten years ago admits of no dispute, and we are not justified in disclaiming judicial knowledge of a world-wide condition seen and known of all men everywhere." And they held consistently with this utterance that the decreased value of the dollar should be taken into account in determining the number of dollars to be paid by a railroad company as compensation for a personal injury sustained in its service. But it is not consistent with this utterance and holding in reaching a valuation

for rate-making purposes at this time to use "normal prewar prices in estimating the cost of labor and material."

To deny to the public utilities in the valuation of their property any compensation for the increased prices to which they are subjected on every side is neither good law nor sound economics.

The doctrine announced by the Commission, by Professor Gray and by the Supreme Court of Missouri is opposed to that announced in the **Minnesota Rate Case**, 230 U. S. 352, l. c. 454:

> "The making of a just return for the use of the property involves the recognition of its fair value if it be more than its cost. The property is held in private ownership, and it is that property and not the original cost of it, of which the owner may not be deprived without due process of law."

The doctrine or principle of "unearned increment" has no place here. Even as used in economic discussion it is inapplicable, for it relates to the increase of values of particular properties, and not to an increase of values in general. From the one a man gains relatively to his fellows, for they have for their property no corresponding increase; from the other he does but hold his own, if he also enjoys a corresponding increase.

If, however, as in this case, there is a general increase of labor and material costs greatly increasing the cost of reproducing the property, and if by reason of that same general increase the cost of rendering the service is greatly enhanced, and if, further, the value of the dollar received in return for the use of the property and the rendition of the service is greatly diminished because of the enhanced price of commodities generally, and these conditions are not reflected in the value of the property used and the service rendered, then there is imposed upon the property an "unearned decrement," which this Court held to be confiscation of the property to that extent.

The Company does not ask for any enhancement of value peculiar to its own property, but only that the standard of value be applied to its property which is applied to all other property, and that its service be compensated upon the same basis upon which other service is compensated. Measure for measure is the rule we invoke. All measures have changed since 1913, but we are not permitted to mete with the measure, by which it is measured to us again.

II.

Valuation, though described as tentative, must be of the date of determination, and rates prescribed, though designated as temporary, must be just and reasonable.

The Commission speaks of its valuation as "tentative" only "and not to be understood as authoritatively fixing the value of the property at this time" (Rec., p. 26).

It also speaks of its rates as put in "for a temporary period of thirteen months from the effective date of the order" (Rec., p. 29). The order was made November 26th, 1919, and became effective December 1st, 1919.

The valuation may have been "tentative" only, whatever that may mean in this connection, but the Commission certainly dealt with it as authoritative, for it based its reduced rates upon it. And the temporary period of thirteen months for which the rates were to run subject to automatic further reduction was a long time for unjust rates to be borne.

A valuation of the property when made by the Commission must be as of the date of determination. No other valuation is provided for and none other would be just and right, or binding under the Constitution.

Section 10,502, R. S. Mo. 1919, prescribes that the "Commission shall with due regard, among other things, to a reasonable average return upon the **value** of the property actually used in the public service and of the necessity of making reservation out of income for surplus and contingencies, determine the just and reasonable rates, charges and rentals to be thereafter observed and in force as the maximum, etc., etc."

And paragraph 2 of section 10,511 provides with respect to the findings of the Commission as to value, that, when introduced in evidence in any action or proceeding before the Commission or any court, they "shall be conclusive evidence of the facts therein stated **as of the date therein stated** under conditions then existing and such facts can only be controverted by showing a subsequent change in conditions bearing upon the facts therein determined."

The Supreme Court of Missouri has held that this statute literally construed as making the findings of the Commission conclusive of the facts found is unconstitutional. The Legislature could not do more than make them prima facie **(State ex rel. v. Atkinson,** 271 Mo. 28). But the statute plainly intends that valuation shall have reference to the date of its determination.

So alike under the statutes of Missouri and the uniform tenor of judicial decision the Commission

erred in denying to the Company the increase in value of its property after 1913.

Here was a reduction of rates ordered to be immediately effective and a further reduction to take effect automatically at the end of the thirteen months' period unless the Commission should otherwise order.

Section 10,502, R. S. Mo. 1919, provides that the Commission may deal with the rates whenever it is "of the opinion, after a hearing had upon its own motion or upon a complaint" that the rates are unjust, unreasonable, etc., etc., and section 10,511, which provides for the valuation of the properties, also provides that "the Commission shall have power to make revaluations from time to time and to ascertain all new construction, extensions and additions to the property of every telegraph corporation and telephone corporation." This the Supreme Court of Missouri said in **State ex rel. Columbia Telephone Company v. Atkinson,** supra, meant a "re-examination and revaluation of the property as it was at the first examination, as well as for the purpose of valuing betterments or changes."

The Commission thus has power to deal with changing and with changed conditions, but in all cases it must proceed with due regard to constitutional guaranties of the rights of property.

In a sense every valuation made by the Commission may be said to be tentative, that is experimental,

empirical, for it is not conclusive upon the Commission itself and may be changed by it as occasion and the facts may require. And so all rates may be said to be temporary as these may likewise be changed.

As the conditions with which it has to deal are not immutable, so its orders are not so, but it has power to deal with changed and changing conditions. But when it makes a valuation of property it must not disregard present value, and when it prescribes rates, these must be just and reasonable. Principles of justice are immutable and may not be disregarded. They are not tentative, experimental or empirical. The vital principle of the Fourteenth Amendment has been tested through every stage of tentation and was implanted in the Constitution as an ascertained, comprehensive rule of justice. To disregard it tentatively in valuation and temporarily in the prescription of rates affects only the quantum of the injustice and not at all the fact. Nor is the wrong in the present case negligible in extent. The "tentative" valuation was an undervaluation of millions, and the temporary period for which the rates based on that undervaluation are to run will result in a corresponding deprivation of return upon the property involved.

Practically considered the basic measure of value taken by the Commission was its valuation of the Caruthersville and St. Louis plants made in 1913, slightly modified by its valuation of the Springfield

plant valued by it in 1916. The Springfield plant amounted to less than one-tenth of the other two. Prices were very low during 1913 and 1914 and for some time thereafter. The testimony on this subject (Rec., p. 267) is as follows:

> "Q. What do you mean by the statement pre-war prices?
>
> A. In 1914 and 1913 we had an era of extremely low prices. And the prices in 1915 did not go up until very late in the year. The prices used in the Springfield case included the very low prices prevailing in 1913 and 1914 and the increased prices prevailing in 1916. The average for the whole would be the normal pre-war prices. It would certainly be a good deal more than 25 per cent lower than the prices prevailing today.
>
> Q. Then when you use the term pre-war prices what period of time do you refer to?
>
> A. I refer to the period immediately prior to the war—three, four or five years.
>
> Q. You refer to a period of time of several years, commencing with 1916 and dating back three, four or five years?
>
> A. Yes; I mean in a general way the prices prevailing before the cost of commodities and labor were affected by the World-War.
>
> Q. You don't; then refer to the date of the entrance of this country into the World-War?
>
> A. No."

When the present valuation was made, June 30th, 1919, there had been no recession of prices, and on the contrary there were increases of wages in July and August (Rec., pp. 316-317).

In **Galveston Electric Light Co. v. Galveston**, Advance Opinions, May 15th, 1922, p. 382, l. c. 389, the Court said:

> "Its (the city's) reduction of the fare by ordinance of June 5th, 1919, was made after hearing, and was doubtless due to the conviction, shared by many, that, with the cessation of hostilities, and the negotiation of the peace treaty, prices and operating cost would fall abruptly. This prophecy, if such there was, proved false. But nearly three years have elapsed since the board adopted the ordinance, and more than a year since entry of the decree below. We know judicially that the period has, in general, been one of continuous price recession, and that the current rates of return on capital are much lower than they then were. But we cannot know to what extent the important changes occurring have affected either gross revenue or the net return."

We do know that there has been no recession to prewar prices, and we may be sure that there will be none. In the Galveston case the Company's expert testified that the future level of prices would be from 60 to 70 per cent above that of 1913. The Master

found, and the District Court affirmed the finding, that the excess would prove to be 33⅓ per cent. In the instant case the excess above the prewar level adopted by the Company's engineers in their appraisals was but 25 per cent.

In the Galveston case present values and present conditions were taken into account. Enhanced values past, present and prospective were considered as elements not to be ignored, and the valuation determined was a present one.

Our insistence here is that qualifying the valuation as "tentative" and not "authoritative," and the rates as "temporary" instead of "permanent," cannot justify a valuation in which present value has been entirely ignored.

In the case of **New York Telephone Company v. Prendergast et al.**, U. S. D. C. New York, decided May 26, 1922, the Commission made "temporary decreases" in the rates, and the Court said:

> "The legal principle is admitted, viz., that plaintiff, like every public utility concern, is entitled to an income equivalent to 'a fair return upon its property dedicated to a public use,' or what is the same thing, 'a fair return upon the reasonable value of such property at the time it is being used for the public.'
>
> "The orders complained of are called 'temporary,' but the description is immaterial if they

are really confiscatory. As a matter of law there is no difference between the permanent and temporary confiscation or deprivation of that to which the complaining party is entitled—in this case a fair return."

The case of the **Potomac Electric Power Co. et al. v. Public Utilities Commission et al.**, 276 Fed. 237, is in point, inasmuch as the Commission there, as here, had power to make valuations and revaluations as changing conditions might require, but deeming the conditions consequent upon the war to be temporary it refused to take present value into account. The valuation was of date December 31st, 1916, and to determine this, the Commission took the fair value of the property as of July 1st, 1914, and as in the instant case "added the net additional expenditures on the property subsequent to that date, and entirely ignored the evidence as to the increase in the value of the property forming the basis of the valuation of July 1st, 1914." In its report the Commission said:

> "Claims by the Company for greater allowance in the reproduction estimate of the physical property were based largely upon the difference in prices created by extraordinary conditions which arose subsequent to July 1st, 1914."

The trial court sustained the Commission, but this

ruling was reversed by the Court of Appeals. The Court said:

> "In the present case the Commission, in effect, declined to find the present value of the property because not satisfied as to how long existing conditions would continue. In assuming this position the Commission must have overlooked paragraph 9 of the statute, authorizing it at any time, of its own initiative, to make a revaluation of the property of any public utility. In our view, it was the duty of the Commission to have considered and given due weight to the evidence as to the then value of the property. As conditions changed and values were substantially affected, it would have been the further duty of the Commission to exercise its discretion and revalue the property. The conditions existing were world-wide and, while their duration and future effect were problematical, there was no immediate prospect of a return to normal conditions. It may be suggested, although the point was not raised in the opinion of the Commission, that practical difficulties would have been encountered in an attempt to ascertain the increase in value of the property between July 1, 1914, and December 31, 1916. But there was substantial evidence before the Commission as to the rise in values and a brief investigation would have enabled the Commission to determine, with substantial accuracy, how much in fairness should be added to the earlier valuation."

The tentative valuation made by the Commission in the present case entirely ignored the present value of the property and operated in view of the rates based thereon as a confiscation of the property.

III.

The findings of the Commission as to the value of the property were made under a mistake of law, are entirely without support in the evidence and are against the evidence of indisputable character in the case. The rates prescribed by the Commission are therefore without legal effect and void.

The Commission in prescribing rates may not proceed ex parte nor decide arbitrarily. There must be a hearing, and after the hearing the Commission must "with due regard, among other things, to a reasonable average return upon the value of the property actually used in the public service and of the necessity of making reservation out of income for surplus and contingencies, determine the just and reasonable rates, charges and rentals to be thereafter observed and in force" (Section 10,502, R. S. Mo. 1919).

Obviously the value of the property is upon the hearing a consideration of first importance. And this may not be arbitrarily determined, but only after a

hearing and subject to judicial review. Paragraph 2 of section 10511, R. S. Mo 1919, provides:

> "For the purpose of ascertaining the matters and things specified in this section, concerning the value of the property of telegraph corporations and telephone corporations, the commission may cause a hearing or hearings to be held at such time or times and place or places as the commission may designate. Before any hearing is had the commission shall give the telegraph corporation or telephone corporation affected thereby at least thirty days written notice, specifying the time and place of such hearing, and such notice shall be sufficient to authorize the commission to inquire into the matters designated in this section, but this provision shall not prevent the commission from making any preliminary examination or investigation into the matters herein referred to, or from inquiring into such matters in any other investigation or hearing. All telegraph corporations or telephone corporations affected shall be entitled to be heard and to introduce evidence at such hearing or hearings. The commission is empowered to resort to any other source of information available, which information shall be offered in evidence on such hearing. The evidence introduced at such hearing or hearings shall be reduced to writing and certified under the seal of the commission. The commission shall make and file its findings of fact in writing upon all matters concerning which evidence shall have been intro-

duced before it which in its judgment have bearing on the value of the property of the telegraph corporation or telephone corporation affected. Such findings shall be subject to review by any circuit court of this state in the same manner and within the same time as other orders and decisions of the commission."

The hearing is in its nature judicial, calling for all the essentials of due process of law. It must be upon notice to the company which is entitled to be heard and to introduce evidence. The Commission is not confined to this evidence, but "may resort to any other source of information available," but this "information shall be offered in evidence on such hearing." All this is essential to make effective the right of judicial review, for if the Commission could determine the value upon matters not in the record a judicial review of its action would not be possible.

As the action of the Commission would be void if had without hearing, so it would be if based upon an erroneous rule or principle of law, or if without evidence to support it, or if against the evidence. And the information and evidence adduced upon which the Commission bases its action must be relevant and competent to prove what it is sought to establish.

In the case at bar the Commission acted under a

mistake of law, and its findings had no support in any of the relevant and competent evidence in the case.

What was the evidence in the case? On behalf of the Company it was the cost as shown by the books, which were accepted as correct. It was, further, appraisals of all the Company's properties made from 1913 down to the time of the hearing and adjusted to the date of June 30th, 1919, which showed a value far beyond cost. And it was further undisputed evidence that the values of 1919 were 50 per cent in excess of those of 1913, and it was indisputable that the excess in the values of 1919 above those of 1913 was very substantial, for that was a matter of common knowledge of which the courts took judicial notice.

The other sources of information resorted to by the Commission were the records in cases before it involving three of the Company's exchanges known as the old Caruthersville, St. Louis and Springfield cases. In these cases the Commission found the value of the St. Louis and Caruthersville properties as of the years 1913 and 1914 respectively, and of the Springfield property as of September, 1916, viz:

St. Louis	$8,500,000
Springfield	815,000
Caruthersville	25,000
Total	$9,340,000

There were net additions to date amounting to $1,663,898, bringing the amount up to $11,003,898. The ratio of the property in 1913 to the net additions since was as 5.6 to 1, so that finding the value according to these figures more than five-sixths of the property at these three exchanges was valued upon the basis of 1913. The Commission took either this basis, or what came to the same thing and is open to the same objection, what it determined to be the actual book cost in 1919.

But these three exchanges comprised only 54 per cent of the properties in Missouri, and as to the outstanding 46 per cent there was no evidence whatever except the appraisals of the Company's engineers.

The Commission rejected the appraisals of the engineers as being excessive, and used these appraisals only in the manner we have shown to get a valuation for the 46 per cent by the assumption that the engineers' appraisals in the case of these properties exceeded their true value in the same ratio that their appraisals of the St. Louis, Springfield and Caruthersville exchanges exceeded the value of those properties as found by the Commission in 1913.

The Company's engineers made their appraisals as of June 19th, 1919, the present value of the property, and this made their valuation of the property 25 per cent above what it would be for 1913, although they testified and it was undisputed that the actual rise in

values over 1913 was 50 per cent, and we believe we may say it is indisputable that the increase in values in 1919 over 1913 was at least twenty-five per cent.

The essential thing is what the Commission did, how it found value. It found it from the cost of the property and fixed it at the cost of the property. And as coming to the same thing, as eliminating the element of increase over pre-war values, they took as a basic measure of value the pre-war prices of 1913.

The Commission acted under a mistake of law; it ignored present value, or if it is assumed that the value as found by the Commission was intended by it as a finding of present value, then there is no evidence to support the finding and the finding is against the undisputed and indisputable evidence in the case.

Under the circumstances the rates prescribed by the Commission are illegal and void.

The finding of the Commission cannot stand unsupported as an ex cathedra utterance. As was said in **State Public Utilities etc. v. Toledo etc. Ry. Co.**, 286 Ill. 582, l. c. 587, the order of the Commission "when directly attacked on appeal cannot stand unless there is some competent evidence in the record forming a substantial basis for the order." The only evidence in that case relied upon as establishing the facts essential to the validity of the order was the order itself and that it was decided was not sufficient.

The same court dealt again with the question in **State Public Utilities etc. v. Springfield etc. Co.**, 291 Ill. 209, where valuation and rates were involved as here. The Court said, l. c. 213:

> "The question for us to determine is whether the Commission proceeded legally in establishing the rates and whether its conclusion that the rates established are just and reasonable is supported by the evidence. In order to determine this question it is necessary to determine what elements shall be considered in fixing the value for rate-making purposes, what methods shall be used in determining the value of these several elements for this purpose and what shall be considered a fair and reasonable return on the value so ascertained."

Reviewing the action of the Commission, the Court said, l. c. 236:

> "The Commission declares in its opinion in this case that the valuation fixed was determined, by considering among other elements, the original cost and the cost to reproduce. A fair consideration of the record shows that no element was considered, except the original cost of construction less depreciation. In this the Commission was in error. A fair present value of a public utility cannot be determined without full and proper consideration being given to the cost to reproduce new. * * * For this error and other errors heretofore pointed out this cause must be remanded, etc."

The Supreme Court of Minnesota holds the same view and declares in **State v. Great Northern Ry Co.,** 135 Minn. 19, that the order of the Commission "may be vacated as unreasonable if * * * it is based upon some mistake of law or if there is no evidence to support it."

The doctrine of these state cases has been approved by this Court. In **Interstate Commerce Commission v. Union Pacific,** 222 U. S. 541, the Court said, l. c. 547:

> "It has been settled that the orders of the Commission are final unless * * * based upon a mistake of law * * * or if the Commission acted so arbitrarily or unjustly as to fix rates contrary to evidence or without evidence to support it."

Interstate Commerce Commission v. Louisville & Nashville R. R. Co., 227 U. S. 88, involved the provision of the Hepburn Act that rates should be set aside "if after a hearing the Commission shall be of opinion that the charge was unreasonable." It was contended that the order based on such opinion was conclusive and could not be set aside, "even if the finding was wholly without substantial evidence to support it." The Court said, l. c. 91:

> "But the statute gave the right to a full hearing, and that conferred the privilege of introducing testimony, and at the same time imposed the

duty of deciding in accordance with the facts proved. A finding without evidence is arbitrary, and baseless. And if the government's contention is correct, it would mean that the Commission had a power possessed by no other officer, administrative body, or tribunal under our government. It would mean that, where rights depended upon facts, the Commission could disregard all rules of evidence, and capriciously make findings by administrative fiat. Such authority, however beneficently exercised in one case, could be injuriously exerted in another, is inconsistent with rational justice, and comes under the Constitution's condemnation of all arbitrary exercise of power.

"In the comparatively few cases in which such questions have arisen it has been distinctly recognized that administrative orders, quasi judicial in character, are void if a hearing was denied; if that granted was inadequate or manifestly unfair; if the finding was contrary to the 'indisputable character of the evidence.'"

In the present case the evidence was of "indisputable character" that the value of these properties was higher, much higher, in 1919 than in 1913 or at the time they were acquired, but that evidence was ignored and rejected as irrelevant, and the lower, and substantially lower, values of 1913 or cost of acquisition was taken as the base for the orders complained of. There was no evidence to support the

finding of the Commission that the Postmaster General's rates were excessive or unreasonable, and none to support the finding that the rates prescribed by the Commission would yield a return of 6.81 per cent or anything approximating that upon the fair present value of the property.

IV.

The Commission's calculation of expenses was far below what was actually incurred in the operation of the property and resulted in a showing of net earnings far beyond what was realized, and the reduced rates being predicated on such showing, there was a taking and deprivation of the company's property without due process of law and a denial of the equal protection of the law.

As to the gross revenue or income, there is no controversy. The actual income for May, June, July and August, 1919, was known and multiplied by three. This was taken as the income for the year beginning with those months.

A table of "Annual Expenses" as the parties respectively compute them is to be found on page 314 of the record. It is as follows:

Expenses, exclusive of charge for depreciation reserve—

Company basis	$4,056,285
Commission basis	4,056,285
Four and one-half per cent payment—	
Company basis	$ 316,452
Commission basis	142,404
Charge for depreciation reserve—	
Company basis	$1,707,269
Commission basis	1,224,000
Increased expenses on account of wages effective July and August—	
Company basis	$ 183,000
Commission basis	.....
Strike expense—	
Company basis	$ 50,000
Commission basis	50,000
The total expense is on—	
Company basis	$6,313,006
Commission basis	5,472,689

a difference of $840,317.

The items in dispute are in the order of magnitude (1) charge for depreciation reserve, (2) increased wages effective in July and August, not taken into account by the Commission, and (3) the 4½ per cent payment under the license contract.

We will consider them in the order stated.

A. The annual charge for depreciation is estimated by the Commission upon an undervaluation of the property, and is entirely inadequate.

Depreciation expresses itself in terms of the value of the property involved. The parties are agreed upon this principle. They both compute the annual charge for depreciation as a percentage of the value of the property, and they agree as to what that percentage should be, viz., 6 per cent upon the property as a whole.

With this agreement in principle and percentage, they differ widely in the concrete result. The Company makes a depreciation charge of $1,707,269, and the Commission one of $1,224,000 (Rec., p. 314). This difference of $483,269 is readily accounted for. It is due to the difference in the valuation of the property. The Company's charge is 6 per cent on $28,458,488, the reproduction cost of its structural plant, ascertained by its engineers in the manner hereinbefore shown, and the Commission's charge is 6 per cent on its valuation of $20,400,000, which is less than it finds the original cost to be (Rec., p. 26).

This difference in the expense account is more than twice the amount by which the Commission diminished the income of the Company through the rates it prescribed, and deducting it from its balance of net income, as shown in the table at page 314 of the record,

it would leave only $1,121,348, or 5.49 per cent, for return, surplus and contingencies on the Commission's valuation. It fixed the rates at what it said would leave "6 per cent for depreciation and 6.81 per cent per annum for return on the tentative value of $20,400,000," thus holding 6.81 per cent per annum to be a reasonable return (Rec., p. 28).

The reduction of income made by the Commission was $209,914 (Rec., p. 28). This is 6 per cent on $3,496,900, so that if the valuation of the property by the Commission should be increased by that amount, the resulting increase in the annual depreciation charge would of itself reduce the Company under the Postmaster General's rates to a rate of return which the Commission held to be reasonable. And this would be an increase of only 17.14 per cent of the Commission's valuation of $20,400,000, a valuation that took no account of and rejected as irrelevant the common knowledge of and the testimony in the case as to the rise of prices since 1913, allowed for in the Galveston case to the extent of 33 per cent and shown by the testimony in this case to amount to 50 per cent (Rec., p. 265). In the matter of the toll rates, the Commission itself gave as a reason for not reducing them as fixed by the Postmaster General "the existing emergency conditions and present high cost of labor and materials and increased wages" (Rec., p.

657), but it ignored all such considerations in making valuation of the property.

Upon the Commission's own report and findings its valuation for the purpose of computing depreciation is too low. It finds the "total adjusted original cost" of the property to be $20,456,621 and arbitrarily eliminates $56,621 of this (Rec., p. 26). Before doing this, however, it had deducted $3,774,501, the amount of the depreciation reserve (Rec., p. 26), which it characterized as "extinguished value recouped from patrons by charges to depreciation" (Rec., p. 25). The financial history of the Company disposes of the statement as to recoupment from patrons, but for the present purpose we pass that by.

The cost of the property is not affected by a consideration of where the capital came from. The property was there as an entirety, the depreciation reserve an undefined and undivided part of the whole. It was all in use and was all being used up in furnishing the service which the Company had to sell irrespective of how it was originally paid for; it was managed and operated by the Company, and out of its revenues the payment of the operating cost involved in the using up of this property in the rendition of the service must be made. The setting up of a depreciation reserve account on the books of the Company did not diminish the cost of the property

by a dollar, nor did it withdraw a dollar's worth of that property from the public use. The cost remains the same and the use continues just the same with the incident operating expense due to the fact that this property is used up in furnishing the service. So the cost of the property in use, that which must be kept in good working order by the Company, **as found by the Commission**, was not as stated by it $20,400,000, but it was that sum plus $56,621, plus $3,774,501, or a total of $24,231,122 and it was upon this amount that the annual depreciation must be computed. Here is a difference in valuation of $3,831,122, six per cent of which is $229,986, an amount in excess of that by which the Commission reduced the revenues of the Company. Adjusting the statement at page 314, accordingly, it leaves available for return $1,374,750 or 6.739 per cent upon the valuation of $20,400,000, a rate less than that held by the Commission to be reasonable.

Passing from the cost or book value and considering the other testimony in the case, we are brought to a like conclusion.

The Commission made an actual appraisal of only three of the Company's plants, Caruthersville, St. Louis and Springfield, and it appraised these, the first two on the basis of 1913 values and the last

upon a 1916 basis. This, plus net additions to June 30th, 1919, with a result as follows, viz:

Caruthersville—	Valuation	$ 25,000
	Net additions....	5,992
St. Louis—	Valuation	8,500,00
	Net additions....	1,623,765
Springfield—	Valuation	815,000
	Net additions....	34,141
	Total	$11,003,898

As to the other plants, there was not a scrap of testimony except that of the Company's engineers. They testified as to all the plants. Their testimony, as agreed by the parties, is that there had been made by them "recent, complete and detailed inventories and appraisements for 96.17 per cent of the total property * * * adjusted and used in the complete appraisal presented at the hearing." The remaining 3.83 per cent of the total property was valued in the following manner: (1) For 2.15 per cent of the total property, accurate office records were used; and for the remaining 1.68 per cent of the total property the per station method was used (Rec., p. 305). Details showing the dates of these appraisals at the different plants and the method at each follow (Rec., pp. 305-308). Exhibit 43, opposite page 230, is a summary showing in the fifth column the value of each plant in

present condition, June 30th, 1919, the working capital of each, sixth column, and the cost of establishing business at each, seventh column. Eliminating from this summary the three plants valued by the Commission, we have left $11,395,859 for the other properties, and $491,005 of working capital, a total of $11,886,-864. Then, instead of the engineers' cost of establishing business, we add what comes to much less, the Commission's allowance of 10 per cent for intangibles, and this gives us $13,075,550, which, added to the Commission's appraisal of the three specified plants, makes a valuation of $24.079,448 for the entire property.

In this computation we have taken the Commission's action where there was any testimony on which to base it, and have taken its estimate as to what was proper in the way of going value, cost of establishing business, or intangibles, and have supplemented this by the testimony of the Company's engineers, which is the only testimony in the case as to the value of all but three of the plants. The Commission recognizes this, saying (Rec., p. 24): "We have only the estimates and appraisals of the Company before us in relation to the value of the property at the other exchanges."

Here results a valuation for depreciation purposes of $3,679,448 in excess of that adopted by the Commission, and 6 per cent of this is $220,076, again an

amount exceeding that by which the Commission reduced the income of the Company to what it held to be a fair return upon its low estimate of the value of the property.

View this case as we may, and for whatever purpose, it is obvious that the difference between the parties is broad as to the principle of valuation. The Commission thinks "the values placed by the Company upon the property are excessive" (Rec., p. 24). Undoubtedly. But why? Because the Company's engineers embodied to the extent of 25 per cent the increased values due to the war in their appraisals. They were right in doing this, and the Commission was wrong in rejecting all increase of values. This increase was not for a day. It may be said as a matter of common knowledge that to the extent the engineers took it into account it has continued to this day. Add to the Commission's appraisal the element of value which they wrongfully rejected, either for depreciation or rate-making purposes, and it should be for both, and the Postmaster General's rates would fall far short of yielding the rate of return upon the property which the Commission held to be a reasonable one.

The tendency is to speak of increase of values in this connection, but in fact what we contend for is not an increase in the value of our property. There

has been a change in the dollar by which values are measured. The dollar is not worth what it was before the war, and we are simply asking an adjustment which takes into account the change.

B. Increase in wages made in July and August not taken into full account by the Commission.

This presents a question of fact, the evidence as to which is conclusive.

The exchange rates established by the Postmaster General were put in effect on May 1, 1919, and the toll rates on June 14, 1919. Therefore, at the time of the hearing, the only months, figures for which were available, which reflected in whole or in part the rates established by the Postmaster General were the months of May, June, July and August, 1919. For this reason both the Commission and the Telephone Company took this four months' period as the only proper period for a study of the revenues and expenses of the Telephone Company. The annual figures were obtained by multiplying the results of this four months period by three. The object of both the Commission and the Telephone Company was to obtain figures for revenues and expenses fairly representing a year's operation under the rates established by the Postmaster General, and this four months period of May, June, July and August was taken as

being the most nearly representative period available (Rec., p. 313).

Revenues:

Based on the income actually received during the months of May, June, July and August, put on an annual basis (the total for the four months period multiplied by three), the Telephone Company's annual gross revenues for the State of Missouri amounted to $7,039,806. The exchange rates established by the Postmaster General were reflected in each of the four months of May, June, July and August. The toll rates, however, being established on June 14, 1919, were reflected in only two and one-half months of the four months period, to wit, in the last half of June and the months of July and August. Therefore, as to revenues, this four months period would not be truly representative unless the toll revenue, which was not reflected at all in May or the first part of June, be put back into these months. This was done by the Commission in the following manner:

The Commission estimated the toll revenue to be $100,000.00 per year, or $8,333.33⅓ per month. Since this toll revenue is not reflected in the actual receipts for the month of May and one-half of the month of June, one and one-half months of the four

months' period, the Commission, in order to put this toll revenue back into May and the first half of June, multiplied $8,333.33⅓ by one and one-half and obtained $12,500.00 as the additional amount that would have been reflected in the four months' period had the toll rates been in effect from May 1st, instead of from June 14th. Since the annual figures are obtained by multiplying the results of the four months' period by three, this figure of $12,500.00 was multiplied by three to annualize it and the Commission added the result, $37,500.00, to the actual receipts during the four months' period (put on an annual basis) of $7,039,806.00, and obtained a gross annual revenue of $7,077,306.00.* This adjustment was a proper one and was rightfully made (Rec., pp. 313, 633, 634).

There is, therefore, no dispute in regard to the revenues, it being agreed that the sum of $7,077,306.00 fairly represents gross revenue for a year's operation under the rates established by the Postmaster General (Rec., p. 313).

Expenses.

The annual expenses claimed by the Telephone Company amounted to a total of $6,313,006.00, and the annual expenses allowed by the Commission

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*Note: The figure of $7,057,306.00, given in the record at page 313, is error. The correct figure is $7,077,306.00.

amounted to $5,472,689. As we have seen the largest item of difference is that arising out of the annual depreciation, and the next in amount is this on account of the increase in wages.

Increases were made in the pay rolls effective in July aggregating on an annual basis $64,000.00, and during the month of August additional increases were made aggregating on an annual basis, $203,000.00 (Rec., pp. 316-319).

The testimony regarding these wage increases is clear and undisputed. Exhibit 11 (Rec., p. 316) shows:

Increases to employes in July, 1919	$ 64,000
Increases to employes in August, 1919	203,000
Increase in taxes (estimated)	60,000

The accountant testified:

"Q. You know increases were granted in July and August?

A. Yes, sir. They were actually given to the employes.

Q. And that (Exhibit 11) is your calculation as to what they will amount to in a year?

A. Yes, sir; annual basis" (Rec., p. 317).

In commenting upon Exhibit 20, which was a state-

ment of the actual revenues and expenses for May, June, July and August, 1919, the accountant testified:

> "This exhibit shows the actual income for May, June, July and August, 1919. These four months are fairly typical as to gross income, but are not fairly typical as to net income, because there were large permanent increases in wages granted in July and August which are not reflected.
>
> Q. You said something about it not being typical—what is your notion about it being typical or otherwise?
>
> A. In July and in August there were certain increases granted which naturally will not be included in a four months statement, which includes May and June, those increases only being effective in July in some cases, and in August in others—if we were to make four months study of expenses based on actual wages of August you would get a different figure than what you will get for four months, which do not include that" (Rec., p. 319).

These wage increases were not fully reflected in the four months period of May, June, July and August (Rec., pp. 316-319). Therefore, in order to make this period truly represent expenses due to wage increases, adjustments must be made to put these wage increases back into the months during which they were not reflected.

Assuming that the July increase became effective on the first of that month, and the August increase on the first of August, which is the assumption most against our interest, and it follows that the July increase was not reflected in the expense accounts of May and June and the August increase was not reflected in the account of May, June and July (Rec., p. 316).

To make the four months period a representative one from which to determine labor costs for the year, the annual expenses for labor must be increased by $183,000 above the amount at which they would stand with this increase not reflected in the months mentioned. The investigation had reference to future rates, and the determination of the expenses of operation must be with reference to what wages were and would be. The increases had been made and there was no suggestion that there would be any recession from them.

The Commission made a like adjustment of revenue in order to make the four months period fairly represent the gross revenues for a year's operation under the Postmaster General's increased rates, and so it should have made a corresponding adjustment in the expenses in order to make the four months period truly represent the net result of a year's operation under the increased rates.

The adjustment of expenses due to wage increases has been made here on identically the same basis the Commission used in adjusting the toll revenue, to wit, the $64,000.00 July wage increases amount to $5,333.33⅓ per month. These wage increases are not reflected in two months of the four months period, to wit, May and June. Therefore, if, in order to put these wage increases back into May and June, we multiply this figure by two, we obtain $10,666.66⅔ as the additional amount that would have been reflected by the four months period had these increases in wages been in effect on May 1st. Multiply this $10,666.66⅔ by three to annualize it and we have $32,000.00 as the additional amount to be added to the annual expenses on account of the July wage increases alone. Similarly, the $203,000.00 August wage increases amount to $16,916.66⅔ per month. These wage increases are not reflected in three months of the four months period, to wit, May, June and July. Therefore, if, in order to put these wage increases back into May, June and July, we multiply this figure by three, we obtain $50,750 as the additional amount that would have been reflected by the four months' period, had these August wage increases been in effect from May 1st. Multiply this $50,740 by three to annualize it and we have $152,250 as the additional amount to be added to the annual expense on account of the August increases alone. This sum and the

$32,000 on account of the July increases give us a total of $184,250 as the sum that should have been added by the Commission on labor account to make the four months' period truly representative of the year's expense, an adjustment in exact correspondence with the adjustment made of the revenues. In the table of expenss at record page 314 this amount was put at $183,000 and we let it stand at that.

The Commission estimated that it cut the exchange rates in the sum of $91,194.30 and that the Company would lose from the disallowance of the installation and moving charges the further sum of $118,000.00, a total annual loss of $209,194.30 in revenue (Rec., p. 625). Deduct from this the $183,000.00, and we have $26,194.30 (a shade above one-third of 1 per cent of the total gross revenue of the Company) as the amount by which its net income would be reduced had the wage adjustment to which it was entitled been made, an amount so small that we may assume it would not justify a disturbance of the rates. Correcting the Commission's findings **by this item alone** brings the rate for "return, surplus and contingencies" to a little below 7 per cent on the Commission's valuation, a rate that neither then nor now could be said to be excessive or unreasonable.

C. The four and one-half per cent payment under the license contract with the American Telephone and Telegraph Company is a legitimate item of expense.

This contract was the subject of attack in Houston v. Southwestern Bell Telephone Company, Advance Opinions 537, and was sustained as valid against the objections there made to it.

The testimony respecting it is practically the same in the two cases, and by very much the same witnesses, and against it in each of the cases there is nothing definite or substantial.

The contract is set out in the record, pp. 322-334. Under it the Southwestern Company is licensed to use all the inventions in the art for which the American Company holds or may acquire patents and the American Company supplies the Southwestern Company promptly with all the telephone instruments it may require without further cost, and renders other services of great value.

There is a large volume of testimony introduced by the Company extending from pages 334 to 559 of the record showing in detail the nature and value of the services rendered by the American Company.

A summary of what it does is made by Mr. Moran, page 489, as follows:

> "The 4½ per cent payment to the American Telephone and Telegraph Company covers (1)

the furnishing to the Southern New England Telephone Company of all telephone transmitters and receivers it uses in its system, with a 3 per cent overstock; the repair and replacement of defective instruments and the substitution of instruments of improved types as they are developed; (2) rights, privileges, and general services, as follows: Advice and direct assistance in (a) building engineering, including the design and character of central office buildings, (b) equipment engineering, including standardization of central office and station equipment, (c) plant engineering, including standardization of construction methods and establishment of protective measures against the interference of foreign currents, (d) traffic engineering, including studies of central office requirements and standardization of operating practice, (e) commercial engineering, including field development studies for a long period of years, (f) fundamental engineering, including the determination of fundamental plant requirements from the data established by development studies; utilization of patents purchased and developed by the American Telephone and Telegraph Company, legal advice and assistance in regard to taxation, national and state; advice and assistance in matters pertaining to governmental regulation, national and state; publicity as advanced by newspaper statements, and pamphlets setting forth the policies and purposes of the Bell Telephone system; advertising, as contained in all the leading magazines of the country; financing, including direct loans and the underwriting of the liability assumed under the

plan for employes' pensions, disability benefits and death benefits; accounting, including the checking of the Company's statements and an annual audit of its books; and a general security and advantage resulting from the immediate availability of and daily correspondence with a comprehensive organization composed of the most expert telephone men in the world."

There is a like contract upon the same terms with all the associated companies. The nature of the service calls for unification and standardization. The arrangement accomplishes and maintains these essentials and has served to make the telephone service of the United States the most efficient, the most comprehensive and the cheapest of its kind in the world. It has in charge the general features of the business, those common to every exchange, to every branch of the business and which should therefore be at the common charge. In the field of development and improvement, the isolated efforts of the local companies could never have accomplished what has been done by community of effort through the American Company. They could not individually afford the expense of the experimental work involved. As it is, improvements in method and mechanism have been more readily discovered and more promptly brought into use.

Consideration of all the testimony in detail would carry this discussion to altogether too great length.

Mr. Hale, the general manager of the Company, speaking of the charge for these services, said (Rec., p. 350):

> "I think they are fully worth it and I don't know of any other place we could get them regardless of the value. I don't know of any other place we could get them except under this arrangement."

Mr. Nims, then vice president of the Company, speaking of this relation with the American Company, said (Rec., p. 353):

> "It is absolutely indispensable if we are to furnish the comprehensive service we are furnishing now. Take conditions like the present crisis. We would have been absolutely unable to have met them without the help and assistance of the American Telephone and Telegraph Company."

Mr. Rhodes goes into great detail as to specific services rendered by the American Company to the Southwestern, and says (Rec., pp. 481 and 482):

> "The foregoing is, I believe, sufficient to warrant the statement that for the City of St. Louis, and for the Southwestern Company as a whole, it is stating the results of the above analysis of the services rendered and the appraisal thereof with fairness and moderation, to say that, for the payment made, the Southwestern Company and

the City of St. Louis receive in return each year from the American Company more than full value in the form of services rendered."

Mr. Moran, president of the Southern New England Company, states that 33.21 per cent of the stock of his company is held by the American (Rec., p. 488), and that it is free at any time to cancel the arrangement between the two, but he said (Rec., p. 490), "I would not think of doing it and I would think I ought to be fired off the job if I did."

Mr. McBurney of the Cincinnati Company, 30 per cent of whose stock is held by the American (Rec., p. 491), testifies that he is free at any time to break his relations with the American Company under this contract, but does not want to do so, for in his judgment the arrangement is a good one and the services worth more than the amount paid for them (Rec., p. 492).

Mr. Estabrook, a traffic engineer of the American Company, speaking of duplication of work by the engineers of the American Company and those of the associated companies, said (Rec., p. 494):

"Q. Do the associated companies have traffic engineers also?

A. Yes; all of the associated companies have traffic engineers who are working on the problems that are peculiar to their own situation.

The American Company engineers study the general problems that affect the business as a whole. They develop equipment, and they develop methods that can be employed throughout the country, but the engineers of the associated companies apply those methods and that equipment to the situation in particular places. They do not try to develop improvements, but they use what is available to them, but they are so tied up in their own routine work that ordinarily they would not have the time nor the men nor the same broad information for making such special studies.

Q. They do not, then, as I understand it, do duplicate work?

A. No; there is almost no duplication of work. I should say there is none whatever between the work done by the American Company engineers and that done by the associated companies' engineers, except that frequently we are called out to some territory on some particular problem and then we work with the local engineers on their own particular problems."

Mr. Pennell, acting chief engineer of the Company, made a statement of services rendered by the American Company to the Missouri and Kansas City (Rec., pp. 502-568), and the subheads show their great variety and practical importance: Hard-drawn Copper Wire, Improvements in Cables, Phantom Circuits, Duplex Cables, Systems of Farmers and Rural Lines, Party Lines in Cities, Development and Standard-

ization of Apparatus, Switchboards, Buildings, Outside Plants, Interference from Power Lines, Electrolysis, Insurance, Traffic Methods and Records, Operating Practices, Transmission Study, Central Office and Substation Equipment, etc., etc.

Mr. Pennell further evaluated such of the services as lent themselves readily to mathematical ascertainment, and testified to the actual saving effected thereby (Rec., p. 557). The total evaluated savings thus made for the entire Missouri and Kansas Company for the year 1916 were $730,000, and for the City of Springfield alone $30,000. The total evaluated saving per station for the entire M. & K. Company was $5.11, as compared to a total payment under the contract for services other than instrument service of 73 cents. For the City of Springfield alone the savings amounted to $4.43 as compared to a payment of 18 cents per station (Rec., p. 557). Convincing as these figures are, it must be remembered that even this testimony omits from consideration numerous services which do not lend themselves to definite computation.

In the face of this testimony the Commission disallowed the payments made pursuant to the contract, and instead made an allowance of 45 per cent for the use of the telephone instruments (Rec., pp. 26-27, 663). It referred to the old St. Louis case in which it decided that the Company should own its telephone

instruments, and valued them upon that basis. The claim for anything and everything else was denied. It seemed to regard as material the fact that the American Company had this contract with four local companies of which it owned the stock. These four companies had the same general officers, whose salaries aggregated $123,000 in round numbers, and this amount it thought was sufficient to pay for services of the kind rendered by this staff, without allowing anything for such services by the American Company (Rec., p. 600). It concluded:

> "There is no doubt that some service was rendered by the parent company. We have fully considered this claim, both on the theory advanced of an express contract, and of a contract implied by law, on the ground that the company having received the benefits of such services will be held to pay the reasonable value thereof, and our conclusion is that the claim cannot be justly allowed on either ground. The company has, in fact, capable, efficient and well-paid officers, and with the valuable services of the officers of the combined companies we think it wholly unnecessary and unjustifiable to add a still further burden on the company for services of the parent company (with headquarters at New York City), which it was not free to request or refuse, and which, in our opinion, it did not need."

But, again, its action was "tentative" and for a

"temporary" period, for it said in the present case (Rec., p. 27):

> "Since the rates in the St. Louis case, supra, were put in for a test period, the Commission has not considered its decision therein with reference to the 4½ per cent payment final and has intended to more fully review the cases involving such question, but as yet have not been able to do so. However, we have concluded to adhere to our decision therein for the purpose of temporary rates in this case."

The Supreme Court of Missouri deals with the question as if only the use of the telephone instruments was involved and thinks the percentage basis for determining the value of that use not a scientific or satisfactory one (Rec., p. 673), and adds:

> "An investigation of this subject shows no unanimity of either judicial or administrative opinion on this subject. The percentage method has, we find, in the main, been approved by two courts and eleven commissions, but four or five other commissions have either disapproved the method or the amount claimed has been reduced or disallowed for rate-making purposes. On account of differences in the facts the rulings or findings in these cases are not decisive of the matter at issue, and hence their citation is unnecessary."

There was nothing in the way of testimony in the case to oppose what was introduced by the Company, nothing to show fraud or bad faith, nothing to show that services were not rendered or that they were not worth what was paid for them. There is nothing to support the suggestion that "the contract would not have been made but for the intercorporate relations existing between the two companies" (Rec., p. 590), or that the plaintiff was not free to request or refuse the services of the parent company or that it did not need those services. The parenthetic suggestion that the headquarters of the parent company were at New York City we dismiss as irrelevant.

The intercorporate relations of the companies were not illegal and they were not, in view of the nature of the service opposed to public policy. No adverse inference could be drawn from the mere fact of their existence. The contract dealt with a very proper subject of contract, matters of internal economy, and being a fair one was entitled to full recognition.

In Houston v. Southwestern Bell Company, Advance Opinions 537, it was objected that the American Company owned substantially all the stock of the Southwestern Company; also that it owned a large majority of the stock of the Western Electric Company. From the American Company the Southwestern Bell Company leased its instruments and secured their maintenance and renewal, and from the

Western Electric the greater part of its equipment and supplies used in operating its local exchange, and the city contended that there should be a disclosure of the profits made by the furnishing companies in these transactions. The Court said, l. c. 539:

> "It is true that the Company did not introduce proof to show what the profits of the two companies were, either upon the business done with it or on their entire business; but it did introduce much evidence tending to show that the charge made and allowed for the services rendered and supplies furnished by them was reasonable and less than the same could be obtained for from other sources. Under the circumstances disclosed in the evidence, the fact that the American Telephone and Telegraph Company controlled the Company and the Western Electric Company by stock ownership is not important beyond requiring close scrutiny of their dealings to prevent imposition upon the community served by the Company, but the Court recognized and applied this rule. Here again, the evidence introduced by the City was meager and indefinite, while that of the Company was exceptionally full and complete, and both contentions must be denied."

The subject we submit was one pertaining to management and not to regulation or control. The judgment of the authorized officers of the Company hon-

estly exercised could not be brushed aside by the mere dictum of the Commission. The powers of the Commission no doubt are very broad, but they relate to regulation and control and not to management. They extend to practically all the public utilities of the state. Their very extensiveness precludes great intensiveness. The Commission can control and regulate these various utilities; it cannot possibly manage or conduct them all. So all the powers conferred upon the Commission refer to the relations of the utilities to the public, and are designed to secure safety and efficiency in service and charges that are reasonable and not discriminatory.

Regulation affects management, but does not displace it. If actual management were assumed by the public it would be a taking of the property, for without any right of management, the right of property is a nullity. And so the courts have uniformly held. In **Chesapeake and Potomac Telephone Company v. Manning**, 186 U. S. 239, the Court, speaking of an act of Congress prescribing rates for telephone service in the District of Columbia, said:

> "While a legislature may prescribe **regulations for the management** of business of a public nature, even though carried on by a private corporation with private capital and for private benefit, the language of such regulations will not be broadened by implication. In other words,

there is no presumption of an intent to interfere with the management by a private corporation of its property farther than the public interests require, and so no interference will be adjudged beyond the clear letter of the statute."

In the case of **Interstate Commerce Commission v. Chicago Great Western Railway Co.**, 209 U. S. 108, Mr. Justice Brewer said:

> "It must be remembered that railroads are the private property of their owners; that while from the public character of the work in which they are engaged the public has the power to prescribe rules for securing faithful and efficient service and equality between shippers and communities, **yet in no proper sense is the public a general manager.**"

In **Chicago, Milwaukee and St. Paul Ry. Co. v. Wisconsin**, 238 U. S. 491, decided June 21st, 1915, the state statute under penalty required that the upper berth of a sleeping car when not engaged should not be put down if the lower berth was occupied. The company contended that it was thereby deprived of its rights of management and from determining whether the unit of privacy in a sleeping car should be a section or a berth. Sustaining this contention

and holding the statute unconstitutional, the Court said:

> "**The company is entitled to the privilege of managing its business** in its own way so long as it does not injuriously affect the health, comfort, safety and convenience of the public. The right of the state to regulate public carriers in the interest of the public is very great. But that great power does not warrant an unreasonable interference with the right of management or the taking of the carrier's property without compensation."

In **People ex rel. v. Stevens,** 197 N. Y. 1, the Delaware and Hudson Company, acting within the scope of its lawful powers, acquired the stock and securities of an electric railroad company, paying therefor by its notes. It then sought to issue its bonds for the purpose of taking up the notes, but the Commission refused its consent, on the ground that the purchase wsa an unfortunate one and that too much had been paid for the property. Overruling the order of the Commission, the Court said respecting its action:

> "This, we think, would be substituting the judgment and discretion of the commissioners for that of the directors and stockholders of the corporation. If such was the purpose and intent of the statute, a doubt might arise with reference to its constitutionality, for, ordinarily, **the ownership of property carries with it the right of occupancy and management,** and, should a statute de-

prive the owner of the right to manage, it would, under ordinary circumstances, undermine his right to protect and make his property remunerative."

In **Bacon v. Boston & M. R. R. Co.**, 83 Vermont 421, the Commission had jurisdiction to order the abolition of grade crossings. In connection with such an order it required the removal of a number of tracks and the construction of an underground baggage room with an elevator. The Court found that an underpass serving the public safety and convenience could be constructed "without involving as an incidental feature thereof the radical changes upon the surface of the right of way which the order requires."

The Court said:

"The order * * * cannot be upheld, for the power of the commissioners in respect to railroad corporations is that of supervision and regulation and not that of management and administration. * * * The phrase 'affected with a public interest,' as applied to public service enterprises which are private in their ownership seems to be a rather happy phrase, used, and apparently invented, by Sir Matthew Hale, and its felicity consists in the fact that it lays no undue emphasis either upon the private character or the public purposes of such enterprises. * * *

> But this does not mean that the commission can do whatever a railway company can do, that the legislature has undertaken to substitute the board of commissioners for the company's board of directors, or to confer upon the former the proper functions of the latter. It means only that their power of regulation and supervision is broad enough to require of every railroad company the discharge of all its duties to the public, whether those duties are expressed in the charter of the company or are implied from the nature of its business, or are imposed by some general law to the operation of which the corporation is subject."

In **Grafton etc. Co. v. State,** 77 N. H. 539, the Commission had denied permission to one company to purchase the property of the others and reviewing and reversing that order the Supreme Court of Vermont said:

> "The public service commission having found that the proposed transactions would be contrary to the public good, the appeal brings that question here for consideration. The measure by which the matter is to be determined is described by the legislature as 'the public good' (Laws 911, c. 164, Sec. 13, as amended by Laws 1913, c. 145, Sec. 13). This is equivalent to a declaration that the proposed action must be one not forbidden by law, and that it must be a thing reasonably to be permitted under all the circumstances of the case. If it is reasonable that a

person or a corporation have liberty to take a certain course with his or its property, it is also for the public good. It is the essence of free government that liberty be not restricted save for sound reason. Stated conversely: **It is not for the public good that public utilities be unreasonably restrained of liberty of action, or unreasonably denied the rights as corporations which are given to corporations not engaged in the public service.**

"The public utilities statute includes individuals as well as corporations in the category of those subject to supervision and regulation" (Id., Sec. 1).

Both the extent of and the limitation upon the power of regulation of public utilities were well stated by Mr. Justice White, in **Atlantic etc. Ry. Co. v. North Carolina,** 206 U. S. 1, l. c. 20, wherein he said:

"**As the public power to regulate railways and the private right of ownership of such property co-exist and do not the one destroy the other,** it has been settled that the right of ownership of railway property, like other property rights, finds protection in constitutional guaranties, and, therefore, wherever the power of regulation is exerted in such an arbitrary and unreasonable way as to cause it to be in effect not a regulation, but an infringement upon the right of ownership, such an exertion of power is void because repugnant to the due process and equal protection clauses of the fourteenth amendment."

The Missouri statute creating the Public Service Commission is in entire harmony with these decisions. It does not repeal, or conflict with, the general statute of the state which gives to a corporation the power to make by-laws, elect directors and appoint officers and agents for "the management of its property and the regulation of its affairs" (R. S. Mo. 1919, Sec. 9749).

The grant of powers to the Commission is not general, but specific, and has regard always to the public interest with which the property is affected. The power is one always existing, but is not like that of management, to be constantly exercised. There must be some occasion for it suggested by the complaint or petition of individuals or of the company or ascertained by the Commission investigating upon its own motion. There must appear some deficiency to be supplied or some wrong to be corrected. In the usual and orderly operation of the property the Commission does not interfere, nor in the determination of policies of business and management so long as the policy is within the lines of the law under which the company is operating. If the service is properly conducted and the rates are just and reasonable and not discriminatory, there is no occasion and hence no warrant for action by the Commission, and so it will, only through reports and other means of knowledge prescribed by the law, keep informed of what is being done.

And management by the company is more than a right. It is a duty and a duty that cannot be declined. Problems of policy, of greater or lesser importance, arise every day and the posts of duty must be constantly occupied by vigilant officials and agents who will deal with these problems as they present themselves.

It might be very convenient for this Company to absolve itself from responsibility by an appeal to the Commission for their determination. Is there a new demand for service which will require an extension of the lines into a new field and the construction of a new exchange? And where shall the exchange be located? An engineering difficulty presents itself. How shall that be surmounted? New methods and new mechanism are suggested. Shall they be adopted? When may the Company try an experiment and when shall it hold fast to that which past experience has approved? A faithful and efficient officer has passed away. Who shall be appointed to take his place?

How the Company shall supply itself with the material and mechanism necessary for the proper conduct of its business and the rendition of the public service it has undertaken is a matter purely of management as much so as the employment of workmen, engineers and superintendents and the selection of its officials. The Commission may not overrule the Company as to the wages or salaries paid so long as these

are honestly determined. A salary so grossly in excess as to indicate fraud may be disallowed, for the practice of fraud upon or by the Company is not a part of the conduct of its business. But the Commission may not cut down the scale of wages and of salaries simply because it deems it too high. At the lower scale it would prescribe, it might well be that competent persons could not be had. The Company is under obligation to maintain a proper standard of service and this presents a complex problem for which the Company, not the Commission, must find the solution. What men, what mechanism, what methods are required, this the Company and not the Commission must determine. And how are they to be obtained? Men are not equally competent, mechanical devices not equally serviceable and methods good in one place may find no acceptance in another. Employe as well as employer, seller as well as purchaser, must be consulted as to wages and prices, and it is the judgment of the representatives of the Company which must be exercised with respect to them. They find it advisable or think it necessary to pay on a certain scale and what they thus pay is an expense of the business and if subject to revision or disallowance by the Commission the Company's right and power of management is reduced to a nullity. They deem it of best advantage to get their telephones under an arrangement which secures the best that are made and which secures an instant and ample supply;

they want the latest improvements of every species of mechanism and at the same time protection against patent litigation; they desire the benefit of the lessons of experience and of the results of experiments, which they cannot themselves afford to carry on; they feel that they can profit by the counsel and advice of the best minds in the business, whose abilities, however, they cannot exclusively engage, and they arrange for all these advantages, what is this but the exercise of their discretion and judgment for the conduct of their business. And the expense of it all is an expense of the business. As was said by the Supreme Court of Illinois in **Public Utilities Commission ex rel. v. Springfield Gas and Electric Company**, 291 Ill. 209.

> "The Commission is not the financial manager of the corporation and it is not empowered to substitute its judgment for that of the directors of the corporation; nor can it ignore items charged by the utility as operating expenses unless there is an abuse of the discretion of the corporate officers."

There is no evidence of, and the Commission did not find such abuse. On the contrary, it has not considered its decision in the St. Louis case "final and has intended to more fully review the cases involving such question, but as yet have not been able to do so" (Pec., p. 27). But they adhere to it "for the

purpose of temporary rates in this case." Meanwhile the hurt to the Company is actual, immediate and continuing. It reduced the expense account by $174,048 and by so much increased the apparent net income available for return, surplus and contingencies, and leaves, the Commission's accounting remaining otherwise unchanged, 7.01 per cent on the Commission's valuation of $20,400,000.

This is on the basis of the Postmaster General's rates. Reducing the apparent net income further by the amount agreed as resulting from the Commission's rates and the return will be 5.98 on the Commission's valuation. Increase the Commission valuation by 20 per cent and under the Postmaster General's rates the return will be 5.79 and under the reduced rates 4.948.

V.

Charges for Installation, Moving, Etc.

The Postmaster General prescribed certain charges (1) for service connections, and (2) for moves and changes. They are set out in detail by the Commission in its report (Rec., pp. 39 and 40).

With respect to the first the Commission said (Rec., pp. 40 and 41):

> "The propriety of continuing this service connection charge will be considered first. The serv-

ice connection charges are levied against all new subscribers for telephone service in addition to the regular monthly exchange rates paid by all subscribers for telephone service, and the service connection charge as provided must be paid before telephone service will be furnished to new subscribers. The amount of the charge is $3.50, excepting in cases where there is no change made in equipment upon the subscriber's premises; then it is $1.50.

"The service connection charge is rested upon the theory that a large number of telephone subscribers use the service for a short time, and that in addition to the usual exchange rates paid by all subscribers for telephone service the new subscribers should pay additional charges toward reimbursing the company for the cost incurred in putting in and taking out telephone equipment to meet the needs of the short-time users.

"The Commission holds that the service connection charges as authorized by the Postmaster General should be discontinued entirely. The ruling of the Commission in the case of Simms v. Columbia Telephone Company, 2 Mo. P. S. C. 256, which was affirmed by the Supreme Court, State ex rel. v. Atkinson, 271 Mo. 36, 37, is invoked against it.

"The service connection charge is unreasonable and constitutes unlawful discrimination against the new subscribers for telephone service.

"A telephone company is required by law to furnish the wires and instruments necessary to

accommodate its patrons, and is entitled to add the cost thereof to its plant account, upon which it is entitled to earn a fair return, and should not be permitted to shift any part of that burden to telephone subscribers by means of a charge against new subscribers as now provided.

* * * * * *

"The cost to the telephone company for serving a new subscriber for long-time service is not greater than the cost of serving an old subscriber for long-time service, yet under the service connection charge the new subscriber who continues the service will pay a higher rate for the same service than the old subscriber will pay.

"The service connection charge as now in effect requires the new subscribers for telephone service to pay more for the same service than is paid by the subscribers who began to take service before the service connection charge was put in force hence, the service connection charge is an unlawful discrimination against the new subscribers (Subsections 2 and 3, section 87, P. S. C. L.).

"For the reasons set out above this Commission holds that the service connection charge should be discontinued on and after the 1st day of December, 1919."

The charge is held by the Commission to be unreasonable, not because of its amount, but upon the ground that there should be no charge and that any charge is discriminatory, as to the new subscriber,

and it was of opinion that the Supreme Court of the state had so decided in the case cited. But in this it proved to be mistaken.

In the instant case, Walker, C. J., held that the charge was unlawful (Rec., p. 669). Graves, J., holds that the question was not involved in the case cited by the Commission, and holds further that the charge is a lawful one. He says (Rec., p. 676):

> "If the rate allowed by the Commission is a reasonable rate for the company, this question may not be in this case except in a very limited way. But the opinion condemns as unlawful these installation, removal and similar charges, and to this I do not agree. On the contrary, the refusal of the Commission to establish and recognize such charges is the thing that works the wrong. Nor does the charge violate any provision of the Public Service Commission Act. The refusal comes nearer working the discriminations condemned by that act. I therefore concur, with the reservations herein set forth."

And with him concur Higbee and Woodson, JJ. These three hold the charge a lawful one, but concur in the action of the Commission abolishing it, because the rates permitted and prescribed by it will yield an adequate return.

James Y. Blair, J., holds that the question is not

involved because the rates allowed are adequate, saying (Rec., p. 682):

> "The subscribers who occasion less than the average installation expense are not here complaining, because the whole of that expense is included in the return from the general rates of which they pay a part. A complaint from them might present the question. The company is not injured by an inequitable distribution of the expense among the subscribers. It is concerned more with the question whether the total return from the whole body of subscribers will give it the sum to which it is entitled. The opinion holds the total return is adequate."

With him concurs Higbee, J., who also concurred with Graves, J. On the rehearing Elder, J., holds that installation charges, when just and reasonable, "are neither discriminating nor unlawful" (Rec., p. 683). David E. Blair, J., did not sit in the case. The result is that four Judges out of six held the charge to be a lawful one.

There was no question before the Commission as to the amount of the charge, and it appears from the opinion of Simpson, C., that they were very moderate and below cost, as a comparison of his figures (Rec., p. 648) with the charge itself (Rec., p. 642) will show. Moreover, Section 10128, R. S. Mo. 1919, provides expressly that the telephone com-

pany shall have power, among other things, "to construct, own, operate and maintain lines of telephone * * * between such points as they may from time to time determine, **and to make such reasonable charges for the use of the same as they may establish.**"

The charge made for this service connection by the Postmaster General was presumptively a fair charge for the service rendered, and it was in the power of that official to make, and of the company to continue, the charge unless it was unlawful per se. As was said in **I. C. C. v. Chicago G. W. R. Co.,** 209 U. S. 108, l. c. 119:

> "It must also be remembered that there is no presumption of wrong arising from a change of rate by a carrier. The presumption of honest intent and right conduct attends the action of carriers as well as it does the action of other corporations or individuals in their transactions in life."

There is, therefore, no presumption that the charge as fixed was excessive and in the absence of any evidence impeaching it, the presumption is the other way. And the commission did not deal with the charge as excessive, for if so, it would have reduced it. True it uses the word "unreasonable," but the context plainly shows that it meant discriminatory against new subscribers and not warranted in any

amount, and consistently with that view "The Commission holds that the service connection charges as authorized by the Postmaster General should be discontinued **entirely**" (Rec. 40). It repeats the objection again and again, never that the charge is excessive, but that "it is an unlawful discrimination against the new subscribers" and for that reason holds it should be discontinued.

The majority of the Missouri Supreme Court held the charge to be a lawful one, but affirmed the action of the Commission disallowing it entirely for the reason assigned that without it, the Company would receive an adequate return upon its property. This even if well founded would not justify the action. The majority concur with Judge Graves in holding that "the refusal of the Commission to establish and recognize such charges is the thing that works the wrong." The Commission had no power to require the rendition free of a service which was the proper subject of a charge, whatever the rate it may have prescribed for other service. The Company was in any event entitled to fair compensation for this service. "The state cannot justify unreasonably low rates for domestic transportation considered alone, upon the ground that the carrier is earning large profits on its interstate business over which so far as rates are concerned the state has no control" (**Smyth v. Ames,** 169 U. S. 466, l. c. 541). The princi-

ple announced in **I. C. C. v. Stickney**, 215 U. S. 98, is applicable. The Court said, l. c. 105:

> "By p. 4, the Commission is authorized and required, upon a complaint, to inquire and determine what would be a just and reasonable rate or rates, charge or charges. This, of course, includes all charges, and the carrier is entitled to have a finding that any particular charge is unreasonable and unjust before it is required to change such charge. For services that it may render or procure to be rendered off its own line, or outside the mere matter of transportation over its line, it may charge and receive compensation (**Southern R. Co. v. St. Louis Hay & Grain Co.**, 214 U. S. 297, 53 L. ed. 1004, 29 Sup. Ct. Rep. 678). If the terminal charge be, in and of itself, just and reasonable, it cannot be condemned or the carrier required to change it on the ground that it, taken with prior charges of transportation over the lines of the carrier or of connecting carriers, makes the total to the shipper unreasonable."

The disallowance of these installation and moving charges, aggregating $118,000, and the reduction in exchange rates aggregating $91,194, a total of $209,194, lessen by so much the net income of the Company and reduce the percentage of return on the Commission's basis of valuation, expenses and income being otherwise unchanged, to 6.84 per cent and much less upon a valuation which takes increased value into

account. Adjustments on account of annual depreciation and of increase of wages omitted from consideration by the Commission result in still further decrease of return.

VI.

No Question as to Division of Rates on Long-Distance Messages Is Involved in This Hearing.

Messages going or coming from beyond the local exchange originate in the one case and terminate in the other, at the local exchange. This necessitates the rendering of certain services by the local organization in connection with the long distance use. The local exchange is allowed a percentage on calls originating with it, but not on those terminating there. The Company allots for the message passing over its own long-distance lines 25 per cent for the local service, while for the message passing over the lines owned by the American Company it allots 15 per cent. The Supreme Court of Missouri said (Rec., p. 668) that it was incumbent upon the Company to show the fairness of these charges and that they were proper allotments, and that its failure so to do constitutes "a tenable ground for not disturbing the order of the Commission, provided that order is, on its face, reasonable."

We are not disturbing the order of the Commission in that respect, for it approved the division of the rates in question.

We note in passing that in the Houston case the Master and the District Court approved a similar division of rates upon perhaps fuller testimony than is present in this record, and accepted as supporting the division that "the allowance is one customarily approved by state commissions throughout the country."

This Court approved their action (Advance Opinions 1922, pp 538-9).

In the present case the testimony was not so much in detail, but it was undisputed and was accepted by the Commission as sufficient. It was given by Mr. Hale, the general manager of the Company, and may be found pages 559 to 562 of the record. He said the rate had been in force some years. Different rates prevailed for a time and then 25 per cent "became as a standardized figure generally accepted as a fair compensation to the local company for the work it did in connection with toll messages" (Rec., p. 561).

It must be borne in mind that the Postmaster General had increased the toll rates as well as the exchange rates, and that the Company was called upon to show cause why it should be permitted to continue to charge the toll rates as well as the exchange rates (Rec., p. 3).

Speaking with reference to this and to the lower percentage charge on messages of the American Company, Mr. Hale said (Rec., pp. 561-2):

> "A. Of course, you must realize that the connecting companies, these small companies, are sharing in the increase in toll rates through the fact that they get 25 per cent higher base. There is another point that I might make clear. There is a different percentage in connection with the A. T. & T. business and with our business; that is due to this: The cost to the terminal company, the work which they do in originating these messages, handling them, etc., is measured by the number of messages. So that the real consideration is the amount per message you get, not your percentage. The A. T. & T. message is a longer haul message, a higher basis, and fifteen per cent of that amounts to more per message than twenty-five per cent of the Southwestern Bell tolls, as a general proposition. I should also say that we pass on to the connecting company the A. T. & T. rate to us. In other words, where a small connecting company originates the A. T. & T. message, they get the commission paid by the A. T. & T."

Thus advised, "and the Commission having made full investigation in relation thereto, finds that under the existing emergency conditions and present high cost of labor and materials and increased wages, the classification of service, rates and charges within this

state provided for in said order (that of the Postmaster General increasing toll rates) should not be disturbed and should be permitted to remain in full force and effect until December 1st, 1919, and thereafter for a temporary period of thirteen months, unless otherwise ordered'' (Rec., p. 657).

There is not a word of criticism of the toll rates or of the division, either as between the exchanges or as between them and the American Company. Had there been objection it would have found expression under the head of revenues and expenses (Rec., pp. 632-634). The Commission accepts the Company's figures as to the revenue, except that it adds the amount which is disallowed of the payments to the American Company under the license contract and another amount on account of increased toll revenues inadvertently left out of the Company's statement. This can be seen more readily in the table at the head of page 314, which shows that all differences between the Commission and the Company are not as to gross revenues, but altogether as to net income, and this because of the difference as to expenses. And these differences are as to annual depreciation, the four and one-half per cent payment and the wage increases of July and August. The finding inherent in the Commission's report and orders approves the toll rates and the division of them, and there is and can be no issue respecting them in this case.

VII.

The Commission's allowance of 6.81 per cent per annum for return, surplus and contingencies does not permit a fair return on the property used in the service.

If the property is fairly valued and the expense account properly stated, the question of what percentage would constitute a fair return would be an academic one.

Leaving aside, however, all questions as to valuation and expenses, we submit that the Commission's allowance of 6.81 per cent is inadequate.

The only witness testifying directly as to this is Mr. Hays, who said (Rec., p. 568):

> "The telephone business in my territory is a business involving very serious hazards and risks, and considering its hazards and risks, a fair rate of return in my judgment would be not less than 10 per cent per annum upon telephone investments.
>
> "I have said that a fair rate of return to be allowed by a commission on telephone property was not less than 10 per cent. I do not mean to be understood as saying that I think such an allowance in my territory at this time would be sufficient to attract the capital needed for telephone development. I do not think it would. But possibly such an allowance, steadily and con-

sistently made and accompanied by liberal treatment in the matter of valuation, would in the course of five or ten years cause the investing public to look upon such securities more favorably."

The legal rate of interest in Missouri is six per cent, and eight per cent may be contracted for.

The capital invested in public utilities usually takes the form of bonds, preferred shares and common shares. The bonds, being a first lien upon the property, and the interest upon them a first charge upon the income, after expenses are paid, can be floated on a lower rate of return than the preferred shares and these in turn because of the preference may be issued or sold on a lower basis of prospective return than the common shares.

Section 10508 R. S. Mo. 1919 provides:

"Sec. 10508. Approval of Issues of Stocks, Bonds and Other Forms of Indebtedness—A telegraph or telephone corporation may, when authorized by order of the commission, and not otherwise, issue stock, bonds, notes or other evidence of indebtedness, payable at periods of more than twelve months after the date thereof when necessary for the acquisition of property, the construction, completion, extension or improvement of its facilities or the improvement or maintenance of its service within the State, or

for the discharge or lawful refunding of its obligations, or reimbursement of moneys actually expended from the income from any source, within five years next prior to the filing of the application therefor, or for any of such purposes."

As under this section a company can issue securities only by authority of the Commission it is obvious that the Commission determines the rate of return upon those securities. In doing this it must take into account the terms upon which money may be had, for investment in these enterprises is not compulsory. And as it is desirable that the utilities shall not only be continued, but shall be extended into new fields and to meet increased demands for their services, there must be permitted a rate of return for the various kinds of securities which will make them marketable.

In **Engineers' Incitation Club v. Union Electric Light and Power Co.**, 8 Mo. P. S. C. 119, the commission recognized this saying:

> "The investor is entitled to a reasonable return on the value of the property devoted to the service of the public, and the interest of the general public demands that **said return shall be sufficient to attract new capital required for extensions and betterments under normal conditions.** State regulation which protects the in-

vestor by granting a reasonable return, so that utility securities may be considered legitimate investments in place of financial speculations, will result in a lower interest rate for funds required for refunding purposes, and for extensions and betterments to provide proper and adequate service, and such lower interest rates are, under State regulation, reflected in lower rates for the service rendered to the public."

In the present case the rate of return allowed is far below what is called for by this utterance, as shown by its action in authorizing the issuance of securities by public utilities companies in Missouri during the years 1919 and 1920. The Laclede Gas Light Company on February 28th, 1919, was authorized to issue $11,000,000 of ten year first mortgage bonds, bearing seven per cent interest to be sold at not less than 96½ per cent of par. On March 15th, 1919, the Missouri Pacific R. R. Company was authorized to issue $6,200,000 of thirty years first mortgage and refunding bonds at 6 per cent to be sold at not less than 90 per cent of par; on September 9th, 1919, the St. Louis and San Francisco R. R. Company $1,283,000 of ten years prior lien mortgage bonds at six per cent to be sold at not less than 90 per cent of par; the Kansas City Power and Light Company on November 28th, 1919, $8,000,000 serial first mortgage and collateral trust bonds at seven per

cent to be sold at not less than par; the Union Electric Light and Power Company of St. Louis on March 30th, 1920, $690,000 of thirteen years refunding and extension bonds at five per cent to be sold at not less than eighty-five per cent of par, and $2,500,000 of three years debentures at seven per cent to be sold at not less than 93.3789 of par; the Southwestern Bell Telephone Company, the plaintiff in error herein, on April 8th, 1920, $25,000,000 five years, gold notes at seven per cent to be sold at not less than 96 per cent of par; the Empire District Electric Company on May 11th, 1920, $2,000,000 of five year collateral serial notes at seven per cent to be sold at not less than 90 per cent of par; the Union Electric Light and Power Company on October 12th, 1920, $1,000,000 of seven per cent preferred stock to be sold at par; and the Empire District Electric Company on December 15th, 1920, $1,725,000 of thirty years first and general mortgage bonds at eight per cent to be sold at not less than 88¼ per cent of par.

These were all preferred securities of one kind or another and all at seven per cent or more, for where it was less, sale at a discount was authorized. The average yield of these securities is 7.72 per cent.

How are these rates of interest on notes and bonds, and dividends on preferred stock to be met, if the entire capital of the Company, including that represented by the common shares, which must incur all

the hazards of the enterprise, is limited to 6.81 per cent?

Take the case of this Company which had occasion for enlarged capitalization in 1920 and was authorized by the Commission to issue $25,000,000 of five years gold notes bearing interest at seven per cent and authorized to be sold at 96 per cent of par, how is it to meet its engagements under the limitations of return imposed by the orders of the Commission in question in this case? The rate prescribed by the Commission was too low as was demonstrated as soon as it was put to a practical test. Notes, which, under the authority granted by the Commission might be sold on a basis of 7.96 per cent were sanctioned by the Commission for the reason undoubtedly that it believed the money needed could not be had on better terms.

The finding of the Commission in this case was that upon the low valuation made by the Commission and upon its erroneous accounting of expenses, there was under the Postmaster General's rates a return of 7.9 per cent on the property and that this rate was unjust and unreasonable; and so the Commission prescribed a schedule of charges for service which reduced it to 6.81, and yet before the year was out and while this schedule of reduced rates was in effect and had an indefinite period to run, the Company was authorized to borrow money on a rate of return ex-

ceeding that which the Commission found was produced by the Postmaster General's schedule.

There is a manifest wrong in such a result. The Company is authorized to borrow money which it must have, at a rate which it must pay to get the money, and at the same time is not permitted to make earnings at the same rate. No business can be conducted long on such terms.

IN CONCLUSION.

Under the undisputed evidence in the case the Commission's valuation was too low by at least twenty-five per cent. And this valuation was not only too low, but it was based upon an erroneous principle of law. It did not determine nor even assume to determine the value at the time of the inquiry. It took as the basis of valuation the original cost of acquiring the property and subjected this to heavy and unwarranted reductions, leaving present values entirely out of the account, or it took what it declared to be the value in 1913, increased only by net additions since, leaving out of view again and altogether the value in 1919, the time of the inquiry. This error in valuation had a double effect adverse to the Company. It reduced the amount upon which the Company was entitled to a fair return; and reduced, below what was actually incurred, the charge, as an

item of expense, for the annual deterioration, the wear and tear of the property which must be made good out of the current revenue. To the extent of $183,000 it ignored the increase in the annual pay roll of the Company, and it disallowed $174,048 legitimate expenditure incurred under the license contract with the American Company. By thus valuing the property and by so stating the expense account, and only by so doing, the Commission found that the Company was getting a return of 7.9 per cent, or, rather, was getting so much for return, surplus and contingencies. This rate the Commission held to be unjust and unreasonable, and so it prescribed some rates and disallowed others, which reduced the Company's revenues $209,194 and its return to 6.81 per cent, which it held to be just and reasonable. These rates of return are on the basis of the Commission's valuation. On the basis of the actual value of the property in 1919 the return, under the Postmaster General's rates, would have been much less than that, and a like result would follow a proper allowance for the annual deterioration of the property which must be met out of current revenues. And a correction of the Commission's account of expenses, either as to the pay roll or under the license contract, would in itself result in a reduction of net income practically equal to that ordered by the Commission. And finally the Commission, upon the basis of its own valution and its own

accounting of revenues and expenses, prescribed rates which would yield for return, surplus and contingencies only 6.81 per cent, when at substantially the same time it authorized an issue of preferred securities by the Company on a basis of 7.96 per cent.

The orders of the Commission were clearly confiscatory in effect and operation; they took the property of the Company without due process of law and denied to it the equal protection of the law. The orders and the judgments of the state courts affirming them should be reversed.

Respectfully submitted,

FREDERICK W. LEHMANN,
J. W. GLEED,
THOS. O. STOKES,
Attorneys for Plaintiff in Error.

CLAUDE NOWLIN,
E. W. CLAUSEN,
Of Counsel.

IN THE

United States Supreme Court

OCTOBER TERM, 1922.

STATE OF MISSOURI, ex rel. SOUTHWESTERN BELL TELEPHONE COMPANY, Plaintiff in Error,

vs.

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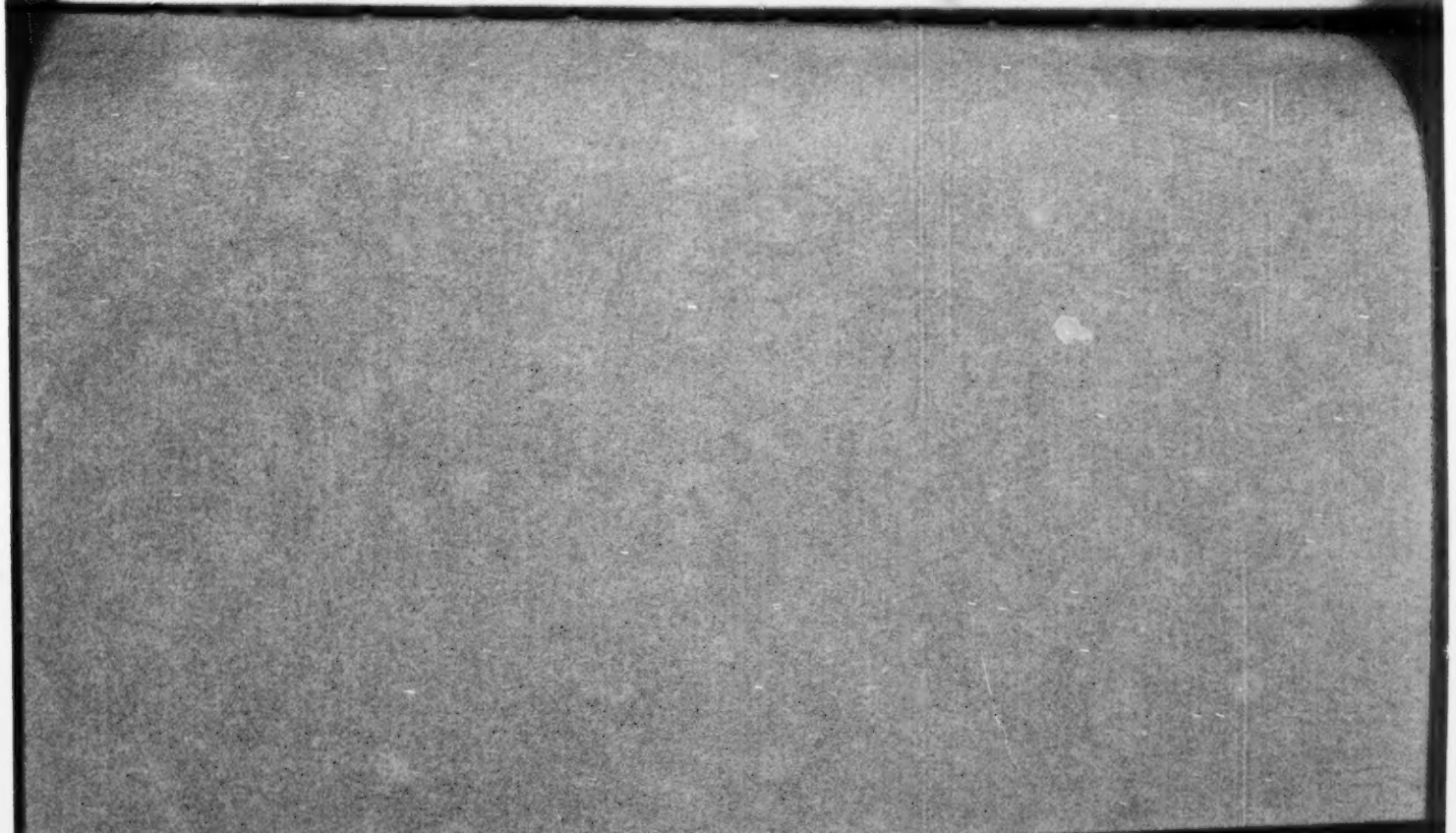
No. 158

IN ERROR TO THE SUPREME COURT OF THE STATE OF MISSOURI.

STATEMENT, BRIEF AND ARGUMENT FOR DEFENDANTS IN ERROR.

L. H. BREUER,
JAMES D. LINDSAY,
Attorneys for Defendants in Error.



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INTRODUCTION AND STATEMENT

The Action here is upon a writ of error to the Supreme Court of Missouri to review a decision of that Court, which in turn was upon a proceeding of judicial review provided for under the laws of the State of Missouri,

(Revised Statutes of Missouri, 1919, Sections 10521, 10522, 10523, 10524, 10525), wherein the state court of last resort sustained the findings and orders of the Public Service Commission, in fixing temporarily the rates to be charged by Plaintiff in Error, Southwestern Bell Telephone Company, for telephone service, and in ascertaining and determining tentatively the fair value of the telephone properties of the Company, as a basis for fixing the rates.

The orders under consideration were made on the 26th day of November, 1919. At that time rates and regulations established by the Postmaster General were in effect. These had suspended and superseded prior rates, prescribed by the Commission. The orders in issue relate to rates in sixty-five local exchanges operated by the Company in that number of cities and towns in Missouri, (Rec. Pgs. 628, 641).

In forty-three of these, such reductions were made in the local rates as amounted in the aggregate to $91,194. In the remaining exchanges no change in rates was made.

The Commission made no change in the tolls for long distance service, but left in force the increased rates established by the Postmaster General for that form of service.

The order eliminated certain charges introduced by the Postmaster General, and known as "Installation and Moving Charges". These charges

were estimated to be, in the aggregate, $118,000 during a yearly period. Thus the total reduction was approximately $209,194 annually, below the rates put into effect by the Postmaster General, but they were yet substantially higher than those existing prior to Federal Control under the orders of the Commission.

THE CONDITIONS UNDER WHICH THE ORDERS WERE MADE.

In July, 1918, pursuant to authority granted by Congress under the War Power of the National Government, the Postmaster General assumed control of the operations of the Company's telephone systems.

On December 21, 1918, by virtue of an order of the Postmaster General, there were put into effect certain new charges for the installation and moving of 'phones under Federal Control, and in the exchanges of the Company. On December 3, 1918, an order was made increasing toll charges for long distance service. On May 1, 1919, an order was made increasing the rates for service in the sixty-five local exchanges of the Company, operated by the Postmaster General.

At midnight of July 31, 1919, Federal Control of the properties of the Company ceased and the properties were returned to the Company, under the provisions of the Act of July 11, 1919, (ch. 10,

41 Stat. L. 157). This Act contained the following proviso:

"That the existing toll and exchange telephone rates as established or approved by the Postmaster General on or prior to June 6, 1919, shall continue in force for a period not to exceed four months after this Act takes effect, unless sooner modified or changed by the public authorities—state, municipal or otherwise—having control or jurisdiction of tolls, charges, and rates, or by contract or by voluntary reduction".

Thereafter, on August 4, 1919, the Commission made its order, (Rec. Pgs. 1-3) requiring the Company to appear and show cause "Why it should be permitted to continue to charge the rates and charges for telephone service now rendered by it within this state and put into effect by order of the Postmaster General and conditionally extended by the Act of Congress for four months from August 1, 1919, including service connection charges."

The Company appeared and answered, and thereafter hearings were held resulting in the findings, here sought to be reviewed, and the orders here asked to be declared invalid.

THE NATURE OF THE ORDERS.

The proceedings involve rates, and a valuation basis of rates, on local properties in sixty-five cities and towns, including St. Louis and other large cities

of the state, but not including Kansas City, nor the Company's toll lines. The orders were thus, of necessity and by express declaration of the Commission, temporary in character and duration. In the report stating the findings and conclusions as to the value of the Company's property, and the rates to be charged, the impossibility of holding hearings in the various cities was recognized, (Rec. P. 630). And in the order following, (Rec. Pgs. 635, 636, 641), the rates were "For the temporary period of thirteen months specified herein, unless hereafter otherwise ordered". By other paragraphs of the order, (Rec. P 641), the Company was required to make and file at the end of twelve months from December 1, 1919, a full report of its revenues and expenses received and incurred, respectively, at each of its exchanges, which was to be in addition to any other reports required of it by law; and it was further provided that the Commission retained jurisdiction of the parties and subject matter, "To continue, change or modify the rates fixed in this order upon the expiration of said period of thirteen months, or at any time hereafter, upon the evidence and facts now before the Commission, or such other evidence as said Commission or any interested parties may offer".

Without delay the Company brought its suit in the Circuit Court of Cole County to review and annul the order; but pending the review proceedings,

and long before the expiration of the period of thirteen months, the Company appeared again before the Commission, with other evidence and evidence of the results of its operations under the rates prescribed in the order assailed, and received from the Commission substantial increases in the rates, at the City of St. Louis, and at other important towns, (Rec. P. 63). Further reference to the subject of subsequent increases in the company's rates will be made later.

THE NATURE OF THE REVIEW PROCEEDING IN THE STATE COURTS.

The writ of review sued out of the Circuit Court by the Company was, under the provisions of Section 10522, Revised Statutes of Missouri, 1919, "For the purpose of having the reasonableness or lawfulness of the original order or decision, or the order or decision on rehearing inquired into or determined."

The same section further provides:

"The Circuit Courts of the State shall always be deemed open for the trial of suits brought to review the orders and decisions of the Commission, as provided in this chapter, and the same shall be tried and determined as suits in equity."

Upon appeal, the Supreme Court of Missouri, in this case, adhered to its rule announced in numerous prior decisions, that it would examine the

facts and exercise its independent judgment upon the facts in the record, giving to the findings and conclusions of the Commission no greater weight than that accorded to those of a chancellor in a suit of equity. Referring to the effect to be given to the acts of The Public Service Commission in rate making cases the majority of the Court, (Opinion of Walker, Rec. P. 665), said:

"When therefore, their acts in this regard are called in question, the Courts are required, as in review of equitable proceedings, to hear and determine the matter involved in such a manner as to do full and complete justice in the premises". (Citing Cases). "The question involved is one of fact; the ultimate matter to be determined is, did the Commission act within its powers as above defined?"

The Plaintiff in Error, there the Appellant, joined with this Defendant in Error in urging as correct the rule: That the Court could not examine the evidence, and annul the order of the Commission, on the single ground tha the order, in the judgment of the Court, was against the weight of the evidence; (Opinion of Blair, concurring in result, Rec. P. 678): "Counsel on both sides of this case invoke the rule"—"Counsel for appellant cite more than 50 decisions as sustaining the rule."

The Supreme Court of Missouri asserting and exercising its rights and the corresponding duty to pass upon all questions of fact, and exercise thereon

its independent judgment, made its finding against the contentions of Plaintiff in Error, as to the value of the property, and the reasonableness of the return.

HISTORY OF THE COMPANY.

The Southwestern Bell Telephone Company, a Missouri corporation, incorporated about January 1, 1917, operates in the States of Missouri, Kansas and Arkansas, (Rec. P. 148).

In Missouri it is the successor to the property of the Southwestern Telegraph and Telephone Company, which operated in the City of St. Louis, and the eastern half of Missouri, and of the Missouri and Kansas Telephone Company, which operated in other portions of Missouri, and in Kansas.

The Company, about the time of its incorporation, acquired and owns about $10,000,000 of the stock of the Pioneer Telegraph and Telephone Company, the Bell corporation operating in Oklahoma, (Rec. P. 159).

The Missouri and Kansas Telephone Company earned dividends in the years of 1882 to 1905 inclusive, varying from 2½% to 7%, but during the years 1906 to 1916, inclusive, earned no dividends. "The average dividend paid on actual cash subscribed and paid in on the stock of the Missouri and Kansas Telephone Company during its entire

life, (From 1882 to 1916 inclusive) was calculated to be 1.43%, (Rec. P. 156).

The Southwestern Telegraph and Telephone Company during its entire life, (1879 to 1916 inclusive) paid in dividends an average of 5.9%, (Rec. P. 157).

In taking over the properties of the Missouri and Kansas Company, and of the Southwestern Telegraph and Telephone Company as of January 1, 1917, the Southwestern Bell Telephone Company put the plants acquired upon its books, at the book values at which they had been carried by the old companies, (Rec. P. 158).

This record of the Company is kept by states, and not by individual exchanges, (Rec. Pgs. 158, 159).

It was said to be impracticable and undesirable to keep records of the different exchanges.

"In 1914 the cost of any particular exchange could not be learned from the books and records of the Company", (Rec. P. 159).

During the period of years prior to 1917, the predecessor companies were engaged in competition or warfare with the numerous local independent telephone companies which were formed in various cities and towns of the State, and with other toll companies. connecting with independent local exchanges. In some contested fields, the Bell systems of companies were forced out by the local com-

panies, in others, the local companies were bought up or forced out. (Rec. Pgs. 4, 631, 661.)

These were conditions prior to state regulation under the Public Service Commission Act, which went into effect April 17, 1913.

In the year 1906, the Missouri and Kansas Telephone Company lost $120,000 (Rec. p. 178). In the year 1907 it earned $19,000, with nothing for reserve. In 1908 it lost $270,000, reserving nothing for depreciation, and in 1909 it lost $21,000, (Rec. P. 179). At the close of the year 1916, as the result of operating deficits, the surplus account had decreased, so that there was a deficit instead of a surplus of $604,329.

The Southwestern Bell Telephone Company paid dividends of 5% in 1917 and 1918. This was said (Rec. P. 159) to be in part possible by means of the dividends accruing upon the stock held in the Oklahoma corporation, above mentioned, which paid 8% dividend.

AS TO THE VALUATION.

The Company gave the value of its property located in Missouri, excluding Kansas City and Independence, as carried upon its books, at $21,476,-632, (Rec. P. 182). This is made up of the amount placed upon the books, in taking over the Missouri and Kansas Telephone Company, and Southwestern Telegraph and Telephone Company properties, as of

their books, plus additions carried to capital account after January 1, 1917. To this was added the sum of $1,051,184, for working capital, making a total of $22,888,943, (Rec. P. 184). It put in evidence estimates of its engineers of Reproduction New Cost, $35,100,471, and Reproduction Cost New, less depreciation, $31,355,278, (Rec. P. 184).

In this estimate of Reproduction Cost New, less depreciation, is included the item of "Cost of Establishing Business", of $5,594,816, (Rec. P. 231). At the time of the proceedings herein involved, the Commission had before it, for comparison, the results of the appraisal, through its own engineers and accountants, of the properties of the Company, at the cities of St. Louis, Springfield and Caruthersville, plus additions made to those properties after the appraisals.

In its appraisal of the St. Louis property, the Commission had found property of the Company, not used nor useful, to the amount of $454,689.16, original cost, and deducted that amount in that appraisal, (Rec. P. 569). In the present case it estimated that in considering the value for the whole state, as carried on the books, the sum of $500,000 was a reasonable deduction to be made upon the whole, (Rec. P. 631).

The Commission allowed for working capital the sum of $1,033,670, or $17,513.52 less than was contended for by the company. This was calcu-

lated upon the basis of 14.74% of the gross annual revenue, the basis adopted in the St. Louis case, (Rec. P. 631).

The Commission deducted from the Company's statement of $22,888,943 the sum of $3,774,501, the proportionate amount of the total depreciation reserve of $7,963,082.37, (Rec. Pgs. 160, 161), attributable to the Company's property in Missouri, based upon the percentage relation of the book cost of the property in Missouri, to the total cost in the three states of Missouri, Kansas and Arkansas. (Rec. P. 632, Company Exhibit 15, Rec. P. 160).

The Commission added for intangibles the sum of $1,859,692.85.

The Commission stated that in view of all the evidence, it was of the opinion that the value of the exchange property of the company in the state, exclusive of Kansas City and Independence, would not exceed $20,400,000, and tentatively adopted that sum as the value for the purposes of the case, and disclaimed intent to be "understood as authoritatively fixing the value of the property at this time", (Rec. P. 632).

DISPUTED ITEMS OF EXPENSES.

The Commission and the Company disagreed as to three items of annual expenses.

(a) The Commission refused to allow in full a charge for the payment to the American

Telegraph & Telephone Company, of 4-1 2% of the gross annual revenue of the Southwestern Bell Telephone Company. It allowed 45% of the 4-12%, based upon its conclusions arrived at in its valuation of the valuation of the St. Louis Exchange, (Rec. Pgs. 569, 633), expressing the intention to more fully view the question, but adopting the percentage mentioned "for the purpose of the temporary rates in this case," (Rec. P. 633).

(b) The Commission calculated for annual reserve for depreciation 6% of $20,400,000, the value as adopted by it and refused to allow for depreciation 6% of $28,454,488, which is the amount of the Companys' estimated reproduction cost new, undepreciated.

(c) The Commission in estimating increased expenses accruing from wage increases, recently going into effect, overlooked in its calculations, the actual length of time these wage increases were in effect, and made its estimate of allowance for wage increases, too small.

(This error of the Commission is calculated by Plaintiff in Error, as being, when extended to the annual period, the sum of $183,000).

Correction, in large measure, of this oversight, and relief in other respects, is shown to have been received by the Company in August, 1920, (Rec. P. 63, Plaintiff's Motion for Rehearing in Supreme Court of Missouri).

PROVISIONS FOR THE DEPRECIATION ALLOWANCE AND DIVIDENDS UNDER FEDERAL CONTROL.

Under the agreement made between the Postmaster General and the American Telegraph and Telephone Company "in behalf of itself and each Constituent Company of the Bell System," (Rec. P. 116), it was provided (Paragraph "b" Section 3 of Rec. P. 117) that "in order to make the provision for depreciation and obsolescense relatively equal to that of the past, during the period of Federal Control, the Postmaster General shall set aside an amount in each year—equal to 5.72% of the book value of the property."

The dividends for one year (the first) were to be "at the average rate of regular dividends paid thereon during the three years ending December 31, 1917," upon capital outstanding July 31, 1918.

DEPRECIATION AND RETURN ALLOWED BY THE COMMISSION.

The Commission allowed for depreciation 6% on $20,400,000, the value adopted; and for return, 6.81% on the value. The 6.81% for return would be reduced in a small percentage by the oversight in computing the wage increases until, and subject to the subsequent action and relief granted August, 1920, (Rec. P. 63) and otherwise.

PROPOSITIONS AND AUTHORITIES.

I

The Supreme Court of Missouri gave to the findings of the Commission no more weight than that of a presumption of right action, and asserted and exercised the right to review the evidence for itself, and to make its own findings of fact, unhampered by the findings of the Commission.

Section 10522, R. S. Mo. 1919.

Opinion of majority in case at bar, (Rec. P. 659), and concurring opinion, (Rec. P. 676) and prior decisions of that court in,

Chicago B. &. Q. R. R. Co. vs. Public Service Comm., 266 Mo. 333.

Lusk vs. Atkinson, 271 Mo. 155-161-165-167.

State ex rel. Ozark P. &. W. Co. vs. Comm. 287 Mo. 522.

II

Upon Writ of Error to the highest Court of the state, this Court will not review the evidence further than to ascertain that the finding of facts by the State Court, upon which depends the asserted constitutional right in issue, is supported by substantial evidence.

Northern Pacific Railway Company vs. State of North Dakota, 236, U. S. 585.

Truax vs. Corrigan, Advance Opinions, 1921-22 (January 16, 1922) Page 132.

Cedar Rapids Gas Light Company vs. Cedar Rapids, 223, U. S. 655.

Ohio Valley vs. Ben Avon Borough, 253 U. S. 287, 292, 294.

Interstate Commerce Commission vs. Union Pacific R. R. Co. 222 U. S. 541, 547, 548.

III

The Supreme Court of Missouri found, upon a review of the evidence, that the rates established by the Commission were not confiscatory, nor unreasonable, and that the rates were calculated upon the basis of the fair value of the property of the Telephone Company, being used and useful in the service of the public. These findings of fact are supported by substantial evidence, are not arbitrary nor capricious, and will not be set aside by this Court upon writ of error.

San Diego Land & Town Co. vs. Jasper, 189 U. S. 439.

Louisiana R. R. Comm. vs. Cumberland Telephone Co. 212 U. S. 414.

Portland Railway Light & Power Co. vs. Oregon Railroad Commission, 229 U. S. 397.

Darnell vs. Edwards, 244 U. S. 564.

New York & Queens Gas Co. vs. McCall, 245 U. S. 545.

IV.

The decision of the highest Court of the state, upon a review of all the evidence, sustaining the orders of an administrative Commission, which are temporary in effect and duration, and which expressly give to the complainant the right at any time thereafter, without prejudice, to reopen the issues involved, should not be set aside upon review on writ of error, solely because the Court may differ in its view as to where lies the greater weight of the evidence, or the more expedient solution of the administrative issues involved.

Cedar Rapids Gaslight Company vs. Cedar Rapids, 223, U. S. 655.

Galveston Electric Co. vs. Galveston, Advance Opinions, (May 15, 1922; 382, 42 Sup. Ct. Rep. 351).

Also City of Knoxville vs. Knoxville Water Co. 212 U. S. 1.

Wilcox et al. vs. Consolidated Gas Co. 212 U. S. 19.

Houston vs. Southwestern Bell Telephone Co., Advance Opinions, (July 1, 1922) Pgs. 537, 538.

V

There is no constitutional or inherent right in the utility company, on the one hand, or, in the public, on the other, which imperatively demands that the fair value of property devoted to a public service, shall be determined upon estimated cost of reproduction new, either in a time of abnormally high prices, or in a time of abnormally low prices; and a finding made in view of the various tests of value, supported by substantial evidence, and approved upon judicial review by the highest court of a state, should not be set aside, because the State Commission and the State Court did not approve a valuation made at prices prevailing in an abnormal period; and particularly so, when the findings are tentative, and the rates temporary, and a reopening of the issues is expressly permitted.

Smyth vs. Ames, 169 U. S. 466.

The Minnesota Rate Cases, 230 U. S. 351.

Brooklyn Borough Gas Company vs. Public Service Commission of New York, Public Utility Reports, 1918 F. 335.

VI

A net return of 6.81 per cent is not confiscatory, nor unreasonable; and particularly so, under an order tentative and temporary in character and duration.

Federal Control Act (As Amended), 40 Stat. L. 451, Sections 1 and 16.

Interstate Commerce Act. Sec. 15-a (Added February 28, 1920), 48 Stat. L. 488.

Wilcox vs. Consolidated Gas Co., 212 U. S. 19, 48, 49.

Denver vs. Denver Union Water Co. 246 U. S. 178, 194.

Lincoln Gas & Electric Light Co. vs. City of Lincoln, 250 U. S. 256, 267.

VII

The disallowance of installation and moving charges is not reversible error, the revenue from other sources not being unreasonably low.

The allowance of such charges was not mandatory upon the Commission. Their allowance or disallowance is a question of expediency or policy of regulation, and not of power, or of undue interference with the management of the property.

Baltimore & Ohio R. R. Co. vs. Pitcairn Coal Company, 215 U. S. 481, 484.

Minneapolis & St. Louis R. R. Co. vs. State of Minnesota, 193 U. S. 53.

Oregon R. R. & N. Co. vs. Fairchild, 224, U. S. 510.

ARGUMENT.

The case is here upon Writ of Error to the highest court of the state. That Court had before it all the evidence introduced before the Public Service Commission.

The state court gave to the findings and conclusions of the Commission, the deference due to the action of an administrative body, but no more, reserving and exercising the right to review the evidence, to make its own findings of fact thereon; to draw its own conclusions.

Violation of a right under the State and Federal Constitutions was asserted by plaintiff in error,—the taking of its property without just compensation,—by reason of a too low valuation of its property in the service of the public, and the attendant and consequent allowance of too small a return thereon.

There were thus sharply presented two issues: Was the valuation so low as to violate the constitutional provision? Was the resultant return so small as to accomplish the same thing?

The state court determined the issues of fact against the contentions of Plaintiff in Error.

Will this Court go farther than to determine whether the findings of the state court are supported by substantial evidence?

Are the findings without substantial support, or, are they so arbitrary or capricious, or so dependent upon questions of law, that this court must weigh the evidence and reach its own conclusions without regard to the findings of the state court? Upon the record here, this is not a case calling for a reversal by this court of the decision reached by the state court.

THE VALUATION OF THE PROPERTY.

The thing to be determined was the reasonable value of the property at the time of its use by the public. Rules governing the process, as definite as may be, have been given by this court. The statement in Smyth vs. Ames, 169 U. S. 466, is a classic, wherein it is said (loc. cit. 547):

> "We hold, however, that the basis of all calculations as to the reasonableness of rates to be charged by a corporation maintaining a highway under legislative sanction must be the fair value of the property being used by it for the convenience of the public. And in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed

> by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property. What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience. On the other hand, what the public is entitled to demand is that no more be exacted from it for the use of a public highway than the services rendered by it are reasonably worth."

Among the "other matters," significance has been given to the history of the property, and of the company operating it, its past earnings, and disposition of the same, its successes or failures, and circumstances of an unusual nature, characteristic of the time and the particular case under consideration, all of which "are to be given such weight as may be just and right in each case," as in Galveston Electric Co. vs. Galveston, (Advance Opinions, 1922, Pgs. 382, 385) and Newton vs. Consolidated Gas Co. (42 Sup. Ct. Rep. 264; Advance Opinions, 1922, Page 305).

In the case at bar, the Plaintiff in Error contends that the sole and controlling measure of the value of its property is its estimate of the cost of reproduction new, at the date of the inquiry, less

accrued depreciation, plus the estimated cost of establishing the business. (Plaintiff's brief, Page 21, where it is said, "The undisputed evidence was that it was worth $31,355,378.00").

In this estimate (Rec. Page 231, Exhibit 43) there is included the amount of $5,594,816, as cost of establishing business.

COST OF ESTABLISHING BUSINESS.

It is proper to remember that the properties and the established business of the Missouri & Kansas Telephone Company, and of the Southwestern Telegraph and Telephone Company, as going concerns, were taken over by the Plaintiff in Error, as of January 1, 1917, at prices or values fixed and accepted by the companies concerned, (Rec. P. 158).

For this reason alone the estimated sum of $5,594,816 should not be considered.

COST OF ESTABLISHING BUSINESS HERE IS A COMMERCIAL EXPENSE.

It is said the Company's books are kept in accordance with the directions of the Interstate Commerce Commission, (Rec. P. 181).

The Uniform System of Accounts for Telephone Companies, as prescribed for Telephone Companies by the Interstate Commerce Commission in accordance with Section 20 of the Act to Regulate Com-

merce, does not list the item "Cost of Establishing Business" in Fixed Capital Accounts; but, at page 73 of said classification of accounts is found the general item, "Commercial Expenses," and under this general item of expense is found the following:

"640. COMMERCIAL ADMINISTRATION.

This account should include the pay and expenses of officers and their office forces directly in charge of the commercial department, either for the company as a whole or for a territorial subdivision; the pay and expenses of employees when engaged in preparing contract orders, handling unsolicited contracts or contract changes including miscellaneous relations with subscribers and patrons not specifically assignable to promotion, collection, or directory expenses. Charge also to this account the cost of postage, printing, and stationery; janitor service, light, heat, and miscellaneous office expenses, if separate offices are maintained for such employees.

Note: This account may include the entire pay and expenses of employees of the commercial department who are only incidentally engaged in duties in connection with promotion, collection, and directories; if such employees are assigned all or

part of their time to such duties their pay and expenses should be charged proportionately to the accounts provided for such expenses.

"641. PROMOTION EXPENSES.

This account should include the pay and expenses of employees and the cost of demonstration, advertising, and canvassing designed to promote the extension of the Company's business, as provided for in the following sub-accounts:

"642. ADVERTISING.

This account should include salaries and expenses of the advertising manager, his assistants and clerks; cost of commercial advertisements in newspapers or magazines; posters, bulletins, advertising sundries, booklets, and all related items; also minor rents and cost of installing and operating telephones in public places wholly for demonstration purposes.

"643. CANVASSING.

This account should include expenses incurred in soliciting new business or for changing or renewing existing service, including the pay and expenses of canvassers.

"644. SUB-LICENSE RELATIONS.

This account should include expenses incurred in developing the exchange of business with sub-license companies and independent connecting telephone companies.

"645. COLLECTION EXPENSES.

This account should include the cost of accounting for and collecting the revenues of the company, as provided for in the following sub-accounts:

"646. REVENUE ACCOUNTING.

This account should include the cost of keeping accounts with subscribers and rendering bills for revenue service, including the cost of postage, stationery and printing, and pay and expenses of bookkeepers and all clerks in accounting department having to do with subscribers' accounts.

"647. REVENUE COLLECTING.

This account should include the expenses of the collection bureau, including postage, stationery, and printing, collectors' salaries or commission, car fares, cost of badges, and of delivering bills.

"648. PAY STATION COMMISSIONS.

This account should include commission allowed for handling exchange and toll service messages from public pay stations.

"649. DIRECTORY EXPENSE.

This account should include the cost of preparing, printing and distributing directories, including the cost of soliciting advertisements for directories. (See account No. 132, "Prepaid Directory Expense.")

"650. OTHER COMMERCIAL EXPENSES.

This account should include all commercial expenses not provided for elsewhere."

Under the history of this property and of its acquisition by Plaintiff in Error, and the rules which must govern the allocation of its disbursements of money, there can be no reason for the allowance as an item of present value, the estimated sum of $5,594,816, as cost of establishing business.

Past Deficits in Return Upon Investment, or Value of Property cannot be made the basis for allowance of "COST OF ESTABLISHING BUSINESS," or "GOING CONCERN VALUE."

In this case confiscation is charged. The record shows a deficit in return on alleged investment by the Southwestern Telegraph and Telephone Company and the Missouri and Kansas Telephone Company, out of whose corporate ashes sprang the Southwestern Bell Telephone Company. The former of the two companies earned an average of 5.9% during its life (Rec. 156, 157), the latter, 1.43%. The latter earned none from 1906 to 1916 inclusive, and had a deficit at the end of the year 1916. (Rec. P. 179).

In Galveston Electric Co. vs. Galveston, (Advance Opinions), at page 386, it is said:

"The fact that a utility may reach financial success only in time or not at all, is a reason for allowing a liberal return on the money invested in the enterprise; but it does not make past losses an element to be considered in deciding what the base value is and whether the rate is confiscatory."

In City of Houston vs. Southwestern Bell Telephone Company, decided May 29, 1922, (Advance Opinions, Pgs. 537, 539) it was said:

"Whether going-concern value should be considered and allowed at all in determining the base for rate making, and, if allowed, what the amount of it should be, depends upon the financial history of the Company, (Galveston Electric Co. vs. Galveston, decided April 10th) and it is impossible for us to determine whether the requisite history for

deciding this question is to be found in the three large volumes of the transcript of the record of the case, containing 1664 pages, without reading the whole of it."

In the Galveston case, the plaintiff company had acquired the property fifteen years before the suit, and the history of the property went back thirty-nine years.

In the case at bar the history of the property extended back an equal period, and the present company had acquired the property a little more than two years before.

The history here fails to support the claim of the item of value classified as "Cost of Establishing Business." The Commission allowed as for "Intangibles" the sum of $1,859,692.85, (Rec. P. 632).

The Plaintiff in Error in its brief (Page 22) complains of this allowance for intangibles as error, and asserts that the "going value of appellant's business is shown by undisputed testimony to be $5,594,816."

This "undisputed testimony," in its final and detailed result, applied to each of the exchanges of Plaintiff, is shown in Plaintiff's Exhibit 43, (Rec. Pgs. 230, 231) and is the sum of estimates of going value for each of the sixty-five exchanges.

Manifestly, this Court did not, in the Galveston case, nor in the Houston case, nor in other cases, accept as conclusive testimony of this kind.

> The basic or physical value of the property, found by the commission as of the time of the inquiry cannot be held to be confiscatory.

The case of Galveston Electric Co. vs. Galveston, supra, in relation of facts, findings and conclusions of law, is illustrative of this case.

In that case, referred to a master by the District Court, (272 Fed. 147) the District Court, Page 154, said;

"In the submission of the case to the master the parties agreed that the property ought to have cost, on the basis of the prices prevailing at the time it and its various units were constructed, $1,715,825."

In his final opinion upon motion for rehearing, the District Court, in modifying certain views, and finally fixing valuation, said: (272 Fed. loc. cit. 171).

"The effect of the altered views, as above expressed, requires the Court to add to the actual figures of my first opinion $1,483,780, which a rechecking of my calculations shows me is correct, $142,281 deducted for grade raising, giving a figure for the rate basis of $1,626,061, instead of $1,500,000 as used in the former opinion. It also requires that, instead of $1,300,000 taken in the former opinion as the value of the depreciables, there be taken for the basis of the depreciable annuity $1,131,000."

Upon appeal, this Court, (Advance Opinions, 384) said:

"The undepreciated reproduction cost on the historical basis—which seems to be substantially equivalent to what is often termed the prudent investment—was agreed to be $1,715,825."

The District Court thus found the fair present value of the property to be less than the historical cost of prudent investment.

This Court, continuing, said:

> "The undepreciated reproduction cost on the historical basis—which seems to be substnatially equivalent to what is often termed the prudent investment—was agreed to be $1,715,825. The parties failed to agree in their estimates of the depreciation accrued up to 1921. The master, estimated that, based on the 1913 price level, it was $390,000; and this estimate the Court accepted. Thus measured, the value of the property, less the depreciation, was $1,325,825. The Court found that the net earnings under the 5-cent fare for the year ending June 30, 1920, had been $90,159, and for the year ending December 31, 1920, $109,286; and estimated that for the year ending June 30, 1921, it would be at least $111,825. The return so found for the

year ending June 30, 1920, is 6.8% of $1,325,825; for the calendar year 1920, 8.2 per cent; and for the year ending June 30, 1921, 8.4 per cent."

In the Galveston case the District Court found the historical cost or prudent investment to be $1,715,825, and found the fair present value to be $1,626,061.

That is, the fair present value was found to be 94.8 per cent of the historical, or prudent investment cost.

The finding, upon appeal, was affirmed, by this Court.

In the case at bar, Plaintiff's statement of book value or historical cost, is $22,888,943, and the Commission fixed $20,400,000 as present value, or, a present value at 89 per cent, approximately of the book or historical value. In the Galveston Case, 272 Fed. l. c. 171, the Court fixed the value "of the depreciables—the basis of the depreciable annuity," at $1,131,000, which is .659% of $1,715,825, the historical cost, or prudent investment. Here, the depreciation allowance is calculated upon $20,400,000, which is 90% of the cost or prudent investment, and is 82% of the estimated present condition value of Plaintiff's physical property reproduced. (Rec. 231).

It is thus apparent that the findings made in this case approach closely to those made in the Galveston case.

The Allowance For Depreciation is Reasonable. Its Function Should be to Preserve Investment, Not to Supply New Capital.

The position of Plaintiff in Error in this case is, that the fair value of the property should be its reproduction cost, less depreciation, in a time of high prices, and that upon this cost should be allowed a percentage of earning for depreciation, which would serve to *replace* obsolete property, not serve only to *preserve* the actual investment in the property becoming obsolete.

Under one requirement the public would, conceivably, be furnishing new capital to the company; under the other, it would protect the investment of the company.

In allowing for depreciation reserve, 6 per cent upon the value found, $20,400,000, or, $1,224,000 annually, (Plaintiff's Brief, Page 15,) and in the deduction made of $3,774,501 of depreciation reserve, (Rec. P. 632) from the Total Plant and Equipment including working capital, the Commission was within the rule laid down by this Court in Louisiana R. R. Comm. vs. Cumberland Telephone Co. 212, U. S. 414, where at page 424, it is said:

"It was obligatory upon complainant (company) to show that no part of the money raised to pay for depreciation was added to capital, upon which a return was to be made to stockholders in the way of dividends for the future.

"It certainly was not proper for complainant to take the money or any portion of it, which it received as a result of rates under which it was operating and so to use it or any part of it, as to permit the company to add to its capital account upon which it was paying dividends to shareholders. If that were allowable, it would be collecting money to pay for depreciation of property and having collected it, to use it in another way upon which the complainant would obtain a return and distribute it to its stockholders.

"That it was right to raise more money to pay for depreciation than was actually disbursed for the particular year there can be no doubt, for a reserve is necessary in any business of this kind, and so it might accumulate, but to raise more than enough for the purpose and place the balance to the credit of capital upon which to pay dividends cannot be proper treatment.

"We are not considering a case where there are surplus earnings after providing for

a depreciation fund and the surplus is invested in extensions and additions."

Plaintiff is Not Entitled, as a Matter of Law to Have its Estimated Reproduction New Cost, Less Accrued Depreciation, Declared to be Conclusive Evidence of Fair Present Value.

It has never been so held. The effect of that method or test of value is not absolute, but comparative.

As was said in Minnesota Rates Cases, 230 U. S. 452:

> "The cost of reproduction method is of service in ascertaining the present value of the plant, when it is reasonably applied and when the cost of reproducing the property may be ascertained with a proper degree of certainty. But it does not justify the acceptance of results which depend upon mere conjecture. It is fundamental that the judicial power to declare legislative action invalid upon constitutional grounds is to be exercised only in clear cases. The constitutional invalidity must be manifest, and, if it rests upon disputed questions of fact, the invalidating facts must be proved. And this is true of asserted value as of other facts."

Subsequent to writing the opinion in the Minnesota rate cases, supra, former Justice Hughes,

acting as referee for the New York Supreme Court, in the case Brooklyn Borough Gas Co. vs. Public Service Commission, P. U. R. 1918-F, 335, 347 said:

> " . . . While this estimate was made as of December 31, 1916, it is manifest that it is not in fact an estimate of the cost of reproduction as of that date. Mr. Shattuck was of the opinion that in view of the extremely high prices then prevailing, it would not be proper to take the actual cost of reproduction as of that time, and for this reason he made an estimate based upon the average cost of various parts of the plant spread over a period of five years ending December 31, 1916. As plaintiff's counsel says, the high cost of material and scarcity of labor rendered the end of 1916 'a prohibitive time to build public utilities of this sort,' and Mr. Shattuck 'showed his fairness by adopting a spread-out of five years in obtaining his costs.'
>
> "While it is important to consider the cost of reproduction in determining the fair value of a plant for rate-making purposes, it cannot be said that there is a constitutional right to have the rates of a public service corporation based upon the estimated cost of the reproduction of its property at a particular time regardless of circumstances. To base rates upon a plant valuation simply represent-

ing a hypothetical cost of reproduction at a time of abnormally high prices due to exceptional conditions would be manifestly unfair to the public, and likewise to base rates upon an estimated cost of reproduction far lower than the actual bona fide and prudent investment because of abnormally low prices would be unfair to the company. This question of taking the hypothetical reproduction cost under abnormal conditions as a rate base should, of course, not be confused with the necessity of recognizing actual costs of operation even though abnormal. A public service corporation is entitled to be reasonably compensated for its service, and the actual cost of its operations must always be taken into consideration in determining whether or not it recieves a fair compensation above that cost. But it is a different thing, after cost has been defrayed, and the question is as to the compensation to be allowed in excess of cost, to take as the basis for a compensatory return an asserted plant value, far above the actual investment, which is reached merely by expert estimates of a cost of reproduction under abnormal conditions. This would result in allowing a public service corporation to take advantage of a public calamity by increasing its rates above what would be a liberal return

not only on actual investment, but upon a normal reproduction cost, in the view that unless it could make an essentially exhorbitant demand upon the public it would be deprived of its property without due process of law. The enforcement of the constitutional guaranty does not require the application of any artificial formula. It has constantly been pointed out that the rate base must be what is called 'the fair value of the property,' and that as to this there must be a reasonable judgment based on a proper consideration of all relevant facts."

In Making Valuation, the Commission did Not Ignore Present Value. The Finding Was not Made Under a Mistake of Law. It is Supported by Substantial Evidence, And the Rates are not Illegal or Void.

The Commission was not compelled, as a matter of law, to accept as conclusive the estimates of value made by Plaintiff's interested expert witnesses.

It had these estimates. It had also, evidence of Plaintiff's general history; its capitalization and indebtedness; its earnings and operating expenses; the price paid or value placed upon the property as of January 1, 1917; and all the relevant circumstances contained in the voluminous record made; and in view of all of these, and the peculiar conditions of the time, it made its findings.

It is suggested that the Commission was arbitrary in applying as it did, the results of its valuation of Plaintiff's exchanges at St. Louis, Springfield and Caruthersville. Upon the record here, including the contract made with the Postmaster General and the conditions under which Plaintiff took those properties on January 1, 1917, the presemption arises and must be indulged that the findings of value made in those cases must have been acquiesced in, and accepted by Plaintiff.

Therefore the finding was not arbitrary, nor unwarranted. The burden here assumed by Plaintiff may be stated as set forth in Louisiana R. R. Comm. vs. Cumberland Telephone Co., 212 U. S. 442:

> "Now it may be true that these returns did not contain all the data upon which a very close and accurate judgment could be based as to the rates that ought to be charged by complainant, under all the circumstances. This is only saying the order may have been erroneous or based upon insufficient evidence, which is no more than saying that upon the investigation the commission may have come to a mistaken conclusion by reason of erroneous inferences from the evidence furnished by complainant's own returns, but that is far from showing that the commission had by a merely arbitrary order promulgated certain

rates without making the slightest effort to obtain any knowledge whatever upon the subject. It did not lose jurisdiction by reason of the mistakes it may have made, and as a result the rates adopted were not merely arbitrary conjectures, but based on reasons which, while they may have been insufficient, cannot be described as resulting in a decision wholly without evidence to support it. The rates, therefore, promulgated must be regarded as prima facie fair and valid, or, in other words, the onus was upon the complainant to show that they were, what it asserts, confiscatory or unreasonable."

The Commission Was Not Arbitrary in Considering Revenues.

The Commission of its own motion corrected an error of oversight by the Company in presenting its case.

There is no dispute here as to the amount of annual revenue derivable from the rates.

On page 313 of the Record appears the following statement of Plaintiff in Error:

> "The Southwestern Company's annual gross revenues for the State of Missouri amounted to $7,039,806.00 (the four month's period put on an annual basis.) The annual increase in gross toll revenues under the Post-

master General's rates amounted to $100,000.00 per year. Since the toll rates were not put in effect until June 14, 1919, the four months' period contained only 2½ months of the toll increase. Therefore, in order to make the four months' period a truly representative period, and in order to make the toll revenue what it would have been had the increased rates been in effect for the entire four months' period, it is necessary to add $37,500.00 to the gross revenue of $7,039,806.00, making a gross annual revenue of $7,057,306.00. *The Southwestern Company overlooked this point in presenting the evidence, but the Commission, in its decision, made the adjustment and the addition which was right and proper.*" (Italics Ours).

The Action of the Commission as to Allowance for Expenses was not Arbitrary or Unreasonable.

The Commission made an error in calculating the time applicable to certain wage increases, urged here by Plaintiff as being $183,000 annually.

In Plaintiff's amended application for a rehearing before the Commission, (Rec. Pp. 9, 11) Plaintiff charged that the Commission "Arbitrarily disregarded and disallowed large items of legitimate expense, including increases in payrolls and payments for services rendered by the American Telephone and

Telegraph Company," but, did not point out in any specific way the disallowance of $183,000 here particularly complained of.

The explanation, in part, and sequel to this action is found in Plaintiff's statement in its motion for a rehearing filed in the Supreme Court of Missouri, (Rec. P. 63). For conveneicne, so much of Plaintiff's statement is here set out:

> "The testimony was that the operating department was undermanned. Mr. Monroe testified that he was short between 200 and 300 operators (Abs. Pp. 228). Mr. Robinson testified that he did not have his normal force. In order to give the service which he deemed the company ought to have, Mr. Monroe needed 200 or 300 more operators than he had been able to get. If he had had this number of operators during the four months' period, the expense would have been very much greater.
>
> All this was overlooked by the Commission. The $183,000 adjustment was overlooked.
>
> That it should not have been overlooked, that the adjustment of $183,000.00 in expenses should have been made, that consideration, in handling the expense account, should have been given to the other matters referred

to above, is sustained by a subsequent decision of the Commission itself.

This cause was decided upon the experience of May, June, July and August, 1919. In March, 1920, the Telephone Company applied to the Commission for increased rates in St. Louis. The cause was heard in April or May, 1920, and decided in August. The increase asked for was granted. The Commission in its opinion says of the St. Louis exchange alone:

"The Telephone Company now finds itself with an annual income of $262,244.00 less than that to which the Commission deems it entitled", (Commission Leaflets, page 312).

This as to St. Louis alone. The decision merely shows that the expenses of the four months should have been adjusted as the income was adjusted, and that the other matters above referred to should have had some consideration.

The Commission by its process of "adjusting" the four-month revenue and neglecting to "adjust" the four-month expense has arrived at a net which is $183,000.00 too large.

Assuming, for the sake of the argument, that the Commission was right in every respect except this, it remains true that its

computation of the net was $183,000.00 too high. The real net was $183,000.00 lower than that found by the Commission.

The Commission, deeming the net $183,000.00 higher than it was, decided that it must be reduced by $91,000.00 in exchange revenue and $118,000.00 in service connection charges. And this they did.

The final result was $183,000.00 per annum less than the Commission intended the company to have.

In a cause involving so many questions of fact and law it is perhaps not surprising that the Court overlooked the foregoing point."

From this it appears that the Commission "overlooked" this item, not that plaintiff pointed out the error, and gave opportunity for timely correction.

The Action of the Commission Relative to the Payment of 4½ per cent of Gross Revenue to the American Telegraph and Telephone Company Was not Arbitrary, Was Tentative, and is not a Ground for Reversal Here.

The Commission was confronted with the necessity of acting in an important matter involving many and intricate questions of fact and law.

If adhered in this matter to views formulated in its examination in the St. Louis valuation and

rate case, and allowed 45% of the 4½% of the gross revenue to be paid to the American Telegraph and Telephone Company.

But, at the same time t expressed the purpose to further review the question, and the fact that its action was dependent upon the circumstances then existing, and for the purpose of the rates, tentative and temporary, then being prescribed. (Rec. P. 633).

The difference in issue is $174,048 annually. The percentage proportion of this sum to $20,400,000, the valuation found, is .00853.

For the reasons indicated, this case is widely distinguishable from Houston vs. Southwestern Bell Telephone Company, (Advanced Opinions 537,) where in it seems no allowance whatever was made.

Refusal to Allow Installation and Moving Charges.

The making of these charges is a means of raising revenue. Their allowance or disallowance is a question of policy. The Commission considered it carefully, and divided. Commissioner Simpson wrote a vigorous dissenting opinion, (Rec. P. 646,) in which Commissioner Flad concurred on application for rehearing. (Rec. P. 655).

In the Supreme Court of Missouri four, of the six Judges sitting, concurred in the view that installation and moving charges, as such, were proper,

but, that their denial in this case did not call for a reversal. (Rec. Pps. 674, 676, 683).

Certainly there was neither arbitrary nor capricious disposition shown by Commission or Court in this matter.

Bond Interest Rates, and the Rate of Return.

The Plaintiff in Error (Brief Pps. 115, 116,) calls attention to numerous bond issues authorized by the Defendant Commission, near the time of the making of the order herein in issue, and the rates of interest prevalent, or permitted, including an issue authorized for Plaintiff in Error on April 8th, 1920, bearing 7 per cent interest.

The interest rate is contrasted with the 6.81% rate of return, and thereby the inconsistency and error of the Commission indicated.

To this two suggestions are made:

First: The fact heretofore mentioned, that about the time of the bond issue referred to, Plaintiff in Error applied to the Commission for a certain relief and raise in rates at its St. Louis Exchange, the locus of more than one-half of its property and of its income in the state, and received the relief asked.

Second: The total annual interest charges of large utilities companies are not to be measured solely by the high rates of interest prevailing in a time of exceptional financial conditions.

Undoubtedly such companies pursue the policy of effecting long time loans, and of refunding their indebtedness in periods of easy money and moderate interest rates, and for long periods of time.

The average rate of interest charge, rather than the highest, should be applied. The high point has been passed: Advance Opinions, 389. (Galveston Case).

The Order, Tentative in Nature, and Temporary In Duration Was Warranted Under the Evidence, and Pending Results Before the Commission, and in the Courts, the State Courts Have Preserved the Status of Plaintiff's Asserted Rights.

The Plaintiff in Error brought this suit in the Circuit Court. That Court, "in its discretion" (Section 10523, R. S. Mo., 1919) suspended the order, and required the excess charges collected to be deposited in a bank pending a hearing, and continued the suspension pending the appeal in the Supreme Court. The latter Court, by order, has continued the status of the parties pending this proceeding. (Rec. P. 104).

There has been no arbitrary action by the Commission, or by the state courts.

Summary.

The order attacked was not final in form or substance.

It is not arbitrary or unreasonable. It is supported by substantial evidence. It has been sus-

tained upon an independent review by the highest court of the State. The decree of the State Court sustained the order in the form and effect in which it was made. As such, the order is before this Court.

It was said in Cedar Rapids Gas Co. vs. Cedar Rapids, 223 U. S. loc. cit. 669:

"It would require a very clear case to warrant the reversal of the decree of a state court which though final in form merely postpones a decision upon the merits for further experience."

The results of experience should be and in this case have been, referred to the Commission, and acted upon.

Courts cannot and will not, as a matter of course, suspend or annul all such orders of regulatory bodies and direct periodical accountings between utilities and patrons, as varying conditions arise.

The judgment of the state courts sustaining the order should be affirmed, and Plaintiff's writ dismissed.

Respectfully submitted,

L. H. BREUER,
JAMES D. LINDSAY,
Attorneys for Defendants in Error.

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PROPOSITIONS AND AUTHORITIES.

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III. The state court found upon a review of the evidence, that the rates were not confiscatory nor unreasonable, and were calculated upon the fair value of the property of the company used and useful in the public service 16

IV. The decision of the state court sustaining the orders which are temporary in effect and duration and which expressly give the right at any time thereafter, without prejudice, to reopen the issues involved, will not be set aside because the court may differ as to where lies the greater weight of evidence, or more expedient solution of the administrative issues involved 17

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ARGUMENT.

I. The findings of the state court are supported by substantial evidence. This court will not go further than to find they are so supported and are not arbitrary or capricious 21

II. The valuation of the property was made in view of the rule laid down in Smyth vs. Ames and of the history of the operations of the company and of its precedessors... 21

III. Cost of Establishing Business. The item of $5,594,816 should not be allowed because the company took over the properties and business of the Missouri & Kansas Telephone Company and of the Southwestern Telegraph & Telephone Company as going concerns as of January 1, 1917, at valuation fixed by the interested companies..... 24

IV. What is claimed by the company as Cost of Establishing Business and as an item of valuation is in reality a commercial expense under the classification of accounts, prescribed by the Interstate Commerce Commission..... 24

V. Past deficits in return cannot be made the basis for allowance of going concern value, under the history of the company as disclosed by the record, and as it must be interpreted in the light of the case of Galveston Electric Co. vs. City of Galveston..... 28

VI. The value of the property as fixed by the Commission cannot be held to be confiscatory under the calculations and rules made and set forth in the District Court and in this Court, in Galveston Electric Co. vs. City of Galveston, which show that the results reached and approved in the Galveston case as to value and as to basis of allowance for depreciation closely conform to the facts in this case..... 31

VII. The allowance for depreciation is reasonable. Its function should be to preserve investment, not to supply new capital to the company. The allowance in this case is within the rule laid down in Louisiana Railroad Commission vs. Cumberland Telephone Co. 212 U. S. 424..... 34

VIII. Plaintiff not entitled as a matter of law to have estimated reproduction new cost, less depreciation, declared to be conclusive evidence of fair present value..... 36

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IX. The Commission did not ignore present value. The finding was not made under a mistake of law and is supported by substantial evidence 39

X. The Commission was not arbitrary in considering allowance for revenues. The Commission, of its own motion, corrected oversights by the company in presenting its case .. 41

X-a. The Commission was not arbitrary or unreasonable in its allowance for expenses. Plaintiff did not point out its application for rehearing before the Commission, the error made by the Commission in estimating wage increases, including the particular sum of $183,000 complained of 42

X-b. The Company applied to the Commission for relief and received relief asked for in August, 1920 43

XI. The question of allowance of installation and moving charges was carefully considered by the Commission, and by the Supreme Court of Missouri, and their action was in no way arbitrary nor capricious 46

XII. Comparison of bond interest rates and rate of return .....

XII-a. Company received relief from the Commission at the time complaint was made that the Commission was allowing a bond issue bearing 7 per cent interest 47

XII-b. The total annual interest charges of utility companies are not to be measured solely by high rates paid on some bond issues made in times of financial stringency .. 47

XIII. The orders of the Commission were tentative, and were reasonable, and the asserted rights of the company have been carefully guarded by the state courts, and there has been no arbitrary action or flagrant violation of Plaintiff's rights, by either Commission or Courts 48

XIV. This is no such clear case as to warrant the reversal of the decree of the state court, which, sustaining the order in the form and effect in which it was made, as being tentative in nature and temporary in duration, left the door open to Plaintiff to apply for relief as experience might indicate; and in view of the fact, that Plaintiff did apply for and obtain relief, pending action in the state courts 48

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